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| The Tata Power Company Ltd |  | OPEN TENDER NOTIFICATION |
| Tender Reference: CC26VJS002 | | Document Date: 10 th Mar 2025 |

The Tata Power Company Limited Invites Tender through E-Tender Two-Part Bidding Process from interested bidders for the following package: -

A. Summary of the tendered package:

| Sr. No. | Description | Tender Reference no. | Bid Guarantee Fee / EMD (Rs.) | Tender Fee (Rs.) | Last Date and Time for payment of Tender Participation fee |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------|-------------------------------|------------------|------------------------------------------------------------|
| For the following package please send mail to Mr. Vinayak Shinde (vinayak.shinde@tatapower.com) with copy to Mr. Rameshkumar P N (pnramesh@tatapower.com) | | | | | |
| 1. | OLA of 1 year for Supply of LTP, FP, MP, SFU and Changeover Panels for Mumbai Distribution | CC26VJS002 | 6,00,000/- | 2,000 /- | 20 th Mar 2025 |

B. Procedure to Participate in Tender.

Following steps to be done before “Last date and time for Payment of Tender Participation Fee” as mentioned above

1. Non-Refundable Tender Fee, as indicated in table above, to be submitted in the form of Direct deposit in the following bank account and submit the receipt along with a covering letter clearly indicating the Tender Reference number –

Beneficiary Name – The Tata Power Co. Ltd.

Bank Name – HDFC Bank Ltd.

Branch Name – Fort Branch, Mumbai

Address – Maneckji Wadia Building, Nanik Motwani Marg, Fort, Mumbai 400023.

Branch Code – 60

Bank & Branch Code – 400240015

Account No – 00600110000763

Account type – CC

IFSC Code – HDFC0000060

2. Eligible and Interested Bidders to submit duly signed and stamped letter on Bidder's letterhead indicating

Tender Enquiry number

Name of authorized person

Contact number

e-mail id

Details of submission of Tender Participation Fee

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E-mail with necessary attachment of 1 and 2 above to be send to vinayak.shinde@tatapower.com with copy to pnramesh@tatapower.com before “Last date and time for Payment of Tender Participation Fee”

Interested bidders to submit Tender Participation Fee and Authorization Letter before Last date and time as indicated above after which link from Tata Power E-Tender system (Ariba) will be shared for further communication and bid submission.

Please note all future correspondence regarding the tender, bid submission, bid submission date extension, Pre-bid query etc. will happen only through Tata Power E-Tender system (Ariba).

No e-mail or verbal correspondence will be responded. All communication will be done strictly with the bidder who have done the above step to participate in the Tender.

Also it may be strictly noted that once date of “Last date and time for Payment of Tender Participation Fee” is lapsed no Bidder will be sent link from Tata Power E-Tender System (Ariba). Without this link vendor will not be able to participate in the tender. Any last moment request to participate in tender will not be entertained.

Any payment of Tender Participation Fee by Bidder who have not done the pre-requisite will not be refunded.

Also all future corrigendum's to the said tender will be informed on Tender section on website <https://www.tatapower.com> only.

CONFIDENTIAL

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OPEN TENDER NOTIFICATION

FOR

OLA of 1 year for Supply of LTP, FP, MP, SFU and Changeover Panels for Mumbai Distribution.

**The Tata Power Company Limited (Tata Power)
Smart Center of Procurement Excellence, 2nd Floor,
Sahar Receiving Station, Near Hotel Leela,
Sahar Airport Road, Andheri East, Mumbai-400059**

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Section A : Tender Notice including Instruction to Bidders

1. Tender Details

1.1 Key Tender Specific Details

| | |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Reference Number | CC26VJS002 |
| Description | OLA of 1 year for Supply of LTP, FP, MP, SFU and Changeover Panels for Mumbai Distribution |
| Type of Tender | Out Line Agreement |
| Estimated Period | One Year |
| Tender Fee | Rs 2000/- |
| Earnest Money Deposit (EMD) | Rs 6,00,000/- Rs. Six Lakhs Only PLEASE NOT THAT IT IS MANDATORY TO SUBMIT EMD IN BANK GUARANTEE FORMAT ONLY |
| Price Basis | Firm Basis |
| Executive Handling this Tender* | Name: Mr. Vinayak Shinde E-Mail ID: vinayak.shinde@tatapower.com |
| Technical Query * | Name: Mr. Ajay Potdar E-Mail ID: avpotdar@tatapower.com |

*You may contact the above personnel from Monday to Friday during office hours only.

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1.2 Calendar of Events

| | | |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| (a) | Payment of Tender Fee and Submission of letter nominating authorized person by Interested Bidder indicating their intent to Buy Tender | Till 19 th March 2025. |
| (b) | Access to Tender Documents through E-Tender system to authorized person of Interested Bidder | 19 th March 2025 |
| (c) | Last Date of receipt of pre-bid queries, if any. | By 24 th March 2025, 1500 Hrs. |
| (d) | Last Date of Posting Consolidated replies to all the pre-bid queries as received | 28 th March 2025 |
| (e) | Last date and time of receipt of Bids | 7 th April 2025 by 15:00 Hrs.* |

Note:- * These date and time are as planned and tentative. In case of change the same shall be intimated to Authorized Person of Interested Bidder through E-Tender System.

Please note post submission of Bids relevant communication will be done with Authorized Person of Interested Bidder through E-Tender System

1.3 Mandatory documents required along with the Bid

- 1.3.1 Bid Guarantee Fee (EMD) of requisite value and validity. PLEASE NOTE THAT BID GUARANTEE ONLY IN FORM OF BANK GUARANTEE WILL BE ACCEPTED.
- 1.3.2 Requisite Documents to ascertain fulfilling of Technical and Commercial Pre-Qualification Requirement as detailed in Tender Enquiry.
- 1.3.3 Technical Submission including Drawings, Type Test details etc as detailed in Technical Specification.
- 1.3.4 Required Commercial Submission as detailed in Tender Document
- 1.3.5 Technical and Commercial Clarification and Deviations as per the format attached in the Tender Enquiry
- 1.3.6 Proper authorization letter to sign the tender and participate in Tata Power E-Tender system on the behalf of bidder.
- 1.3.7 **For vendor not registered with Tata Power, Duly filled Vendor Registration form with all supporting documents is mandatory to participate in the Tender.**

Please note that in absence of any of the above documents, the bid submitted by a bidder shall be liable for rejection.

Also please note that whenever editable format are shared it is requested that data be filled in relevant cells. No formatting or addition / deletion of rows / columns to be done. Wherever editable Excel submission are requested the file should be free from references, macros etc.

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Checklist of Document Submission

| Stage of Tendering | Document | Type of Format | Mode of submission |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------|
| Before last date of Pre-Bid Query | Query / Clarification / Deviation (QCD) Format. (F1) Technical and Commercial | Editable Excel Format | Through message in E-tender system |
| Bid Submission Envelope 1 (First Part) | Earnest Money Deposit | Original Bank Guarantee | In Sealed Envelope |
| Bid Submission Envelope 2 (Second Part) | Documents to be uploaded in Ariba only. In case of multiple files, a zipped folder can be attached for the same (size limit of 100MB per zipped file) | | |
| To be submitted Under Tab 2.1 in Ariba | Duly filled PQR and supporting documents | | |
| | Duly filled PQR format | Editable Excel Format | E-Tender System |
| | Backup documents for Technical and Commercial PQR | Signed and Scanned documents | E-Tender System |
| To be submitted under Tab 2.2 in Ariba | Technical Submission and Supporting Documents | | |
| | Duly filled Unpriced Bid Format. Signed copy of Technical Specifications indicating your acceptance of the same | Signed and scanned copy of document | E-Tender System |
| To be submitted under Tab 2.3 in Ariba | Commercial Submission and supporting document | | |

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|----------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------|
| | Letter of Undertaking (FOR VENDORS NOT REGISTERED WITH TATA POWER) | Scanned Copy of letter of undertaking duly filled, stamped and signed | E-Tender System |
| | E-auction Undertaking form | Scanned Copy of letter of undertaking duly filled, stamped and signed | E-Tender System |
| | | | |
| Bid Submission Envelope 3 (Third Part) | Duly filled Priced Bid Format | Hard copy in original duly signed and stamped | Sealed Envelope |
| | Duly filled Priced Bid Format | To be entered in E-Tender System | E-Tender System |

1.4 Deviation from Tender

Normally, the deviations to tender terms are not admissible and the bids with deviation are liable for rejection. Hence, the bidders are advised to refrain from taking any deviations on this Tender. Still in case of any deviations, all such deviations shall be set out by the Bidders, clause by clause in the Query / Clarification / Deviation (QCD) Format. Deviations have to be mandatorily submitted in editable Excel sheet.

Technical or Commercial Deviation should be mentioned in Deviation Format only. Deviation in any other document or Format will not be considered.

1.5 Right of Acceptance/Rejection

1.5.1 Bids are liable for rejection in absence of following:-

1.5.2 Mandatory Documents as listed in 1.3 above

1.5.3 Price Bid as per the Price Schedule mentioned in Tender Document

1.5.4 Receipt of Bid and Response to queries within the due date and time

Tata Power reserves the right to accept/reject any or all the bids without assigning any reason thereof.

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1.6 Qualification Criteria

| S.No. | Description | Qualifying Criteria | Evaluation Documents Required |
|-------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Infrastructure | Bidder must be an OEM of Equipment with manufacturing facility / assembly in India. The bidder must have in-house routine and acceptance testing facilities for acceptance as per relevant IS/IEC | Self-undertaking to be submitted in this regard. TATA Power reserves the right to inspect the said manufacturing facility as a proof of compliance to this parameter. |
| 2 | Supply and Experience | The bidder must have supplied for same or higher size and voltage a) A minimum of 860 FP, 110 LTP, 710 SFU, 335 Changeover Panels during last 3 years or b) A single order of 430 FP, 55 LTP, 350 SFU, 170 Changeover Panels or c) Two orders of 250 FP, 33 LTP, 210 SFU, 100 Changeover Panels in last 3 years. Indian Subsidiaries of global companies having plant in India are also eligible to bid if the qualification requirements stated above are met independently or in combination with the parent company. Declaration from parent company needs to be submitted. | Purchase Order Copies and Completion Certificates. Self-undertaking to be submitted in this regard. TATA Power reserves the right to inspect the said manufacturing facility as a proof of compliance to this parameter. |

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| S.No. | Description | Qualifying Criteria | Evaluation Documents Required |
|-------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Type Test | <p>The bidder shall submit Type test reports obtained from CPRI/ERDA/ International Accredited Lab for the equipment / material offered. The type tests should have been conducted on the equipment / material of the same design meeting IS guidelines.</p> <p>The type tests should have been conducted within 5 years prior to the date of bid opening. Time period for type test can be extended by another 5 years as a special case if there is no change in design / material of construction (MOC).</p> <p>In case the type test reports furnished are not for the quoted equipment / material but for the equipment / material with higher voltage class and/or different capacity, then type test shall be carried out for the offered equipment / material from CPRI /ERDA/ International Accredited Lab without any cost implication to the owner and the Type Test reports shall be submitted before dispatch of the equipment / material and within 120 days of outline agreement.</p> | <p>Type Test Report.</p> <p>Undertaking that there is no change in design / material of construction (MOC) if Type Test Report older than 5 years.</p> <p>Undertaking that type test shall be carried out for the offered equipment / material from CPRI / ERDA/ International Accredited Lab without any cost implication to the owner and Type Test reports shall be submitted before dispatch of the equipment / material and within 120 days of outline agreement.</p> |
| 5 | Commercial Capability | Average Annual turnover of the bidder for last three years shall not be less than Rs 20 Crs | Copy of audited P&L Account to be submitted in this regard (with UDIN No) |
| 6 | Performance | The bidder should have performance certificates for 2 year satisfactory performance from at least 2 reputed Distribution Utilities for equipments of similar or higher rating. The work against these issued certificates should be completed in last seven years from the date of bid submission. In case the bidder has a previous association with any of Tata Power Groups for similar products and services, the performance feedback for that bidder by Tata Power User Group shall only be considered irrespective of performance certificates issued by any third organization. | Supply List & Performance Certificates from the utilities |

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1.7 Pre-Bid Queries

Technical or Commercial Pre-Bid Queries if any has to be sent through message in E-Tender System. Pre-Bid Query has to be sent only in the Query / Clarification / Deviation (QCD) Format. Pre-Bid Queries sent in any other format or send through any other communication channel will not be accepted and answered. Pre-Bid Query have to be sent in the stipulated timeline as defined in the Tender Document. No Pre-Bid Query will be accepted after the due time and date as specified as "Last Date of receipt of pre-bid queries, if any"

1.8 Marketing Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the General Condition of Contracts and other parts of Tender Documents. Bidders must agree to these rules prior to participating. In addition to other remedies available, Tata Power reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the General Condition of Contracts or other part of the Tender Documents. A bidder who violates the market place rules or engages in behavior that disrupts the fair execution of the marketplace, may result in restriction of a bidder from further participation in the marketplace for a length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace
- Breach of terms as published in TENDER
- Submit irrelevant documents or frequently cases of missing documents as part of compliance to Qualifying, Technical or Commercial Requirements causing unnecessary delay in Tender Evaluation

1.9 Supplier Confidentiality

All information contained in this tender is confidential and shall not be disclosed, published or advertised in any manner without written authorization from Tata Power. This includes all bidding information submitted to Tata Power. All tender documents remain the property of Tata Power and all suppliers are required to return these documents to Tata Power upon request. Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

1.10 Payment Terms

100% payment shall be made within **60 days** from the receipt and acceptance of the material at the Consignee Stores/Site/Location as per the Contractual Terms and Conditions.

2. Evaluation Criteria

- The bids will be evaluated technically on the compliance to tender terms and conditions.
- The bids will be evaluated commercially on the overall all-inclusive lowest cost for the complete tender BOQ / each line item as calculated in Schedule of Items. Tata Power however, reserves right to split the order line item wise and/or quantity wise among more than one Bidder. Hence all bidders are advised to quote their most competitive rates against each line item.

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- Bidder has to mandatorily quote against each item of Schedule of Items. Failing to do so, Tata Power may reject the bids.

NOTE: In case of a new bidder not registered with Tata Power, factory inspection and evaluation shall be carried out to ascertain bidder’s manufacturing capability and quality procedures. However Tata Power reserves the right to carry out factory inspection and evaluation for any bidder prior to technical qualification. In case a bidder is found as Disqualified in the factory evaluation, their bid shall not be evaluated any further and shall be summarily rejected. The decision of Tata Power shall be final and binding on the bidder in this regard.

2.1 Price Variation Clause and Cap: NA – On firm basis

3. Submission of Bid Documents

3.1 Bid Submission

Bidders are requested to submit their offer in line with this Tender document. Bids shall be submitted in 3 (three) parts:

FIRST PART: “EMD – BANK GUARANTEE” of Value detailed in 1.1 valid for 180 days from the due date of bid submission in the form of Bank Guarantee favoring ‘The Tata Power Company Limited’. The EMD has to be strictly in the format as mentioned in Tender Document, failing which it shall not be accepted by Tata Power and the bid as submitted shall be liable for rejection.

Note : BG of 180 days and further claim period of 180 days is needed. In case the same cannot be issued by your bank then BG valid for 365 days can be provided.

Tata Power Bank details for EMD BG / NEFT:

Beneficiary Name – The Tata Power Co. Ltd.

Bank Name – HDFC Bank Ltd.

Branch Name – Fort Branch, Mumbai

Address – Maneckji Wadia Building, Nanik Motwani Marg, Fort, Mumbai 400023.

Branch Code – 60

Bank & Branch Code – 400240015

Account No – 00600110000763

Account type – CC

IFSC Code – HDFC0000060

The hard copy of EMD in a sealed envelope should be sent on address mentioned in Tender document. Pls mail the UTR details in case of NEFT for verification.

First Part has to be submitted in Sealed Envelope.

SECOND PART: “TECHNICAL / UN-PRICED COMMERCIAL BID” shall contain the following documents:

- Documentary evidence in support of Technical, Commercial qualifying criteria

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- b) Technical literature/GTP/Type test report/Details of Qualified Manpower Available/ Testing Facility available etc. *(complete in all respect as desired and detailed in Technical Specification and Technical Requirement Section)*
- c) Duly filled Technical and Commercial Deviation Sheets
- d) Duly filled formats like Authorization affidavit form
- e) *Unpriced Commercial Bid*

The technical / un-priced commercial bid shall be properly indexed and is to be submitted in Soft Copy through E-Tender system of Tata Power. Hard Copy of Technical Bids need not be submitted.

Second Part has to be submitted through E-Tender System Only

THIRD PART: “PRICE BID” shall contain only the price details and strictly in Price Bid format along with explicit break up of basic prices and applicable GST. Basic price should include packaging forwarding, freight, transit insurance and any other cost envisaged by the bidder.

Third part has to be submitted through E-Tender System (ARIBA) only.

FOR BIDS INVITED THROUGH E-TENDER SYSTEM (TECHNICAL AND UN-PRICED COMMERCIAL BID) :

In response to advertisement Bidder has to provide details of person authorized to Bid on behalf of the Bidder. An e-mail will be generated by E-Tender System and the authorized person can download the Tender Documents from the system.

SECOND and THIRD PART of the Bid have to be submitted in E-Tender System.

Bidders have to mandatorily submit SECOND PART (Technical and Un-priced commercial Bid) only through E-Tender system of Tata Power. Bids submitted through any other form/ route shall not be admissible.

EMD BG to be sent in a sealed envelope which shall be clearly marked as below to the below address.

EMD

“Please mention Tender Reference No”

The Tata Power Company Limited, Smart Center of Procurement Excellence, 2nd Floor, Sahar Receiving Station, Near Hotel Leela, Sahar Airport Road, Andheri East, Mumbai-400059

Bids submitted by Email/Telex/Telegram /Fax will be rejected. No request from any Bidder to Tata Power to collect the proposals from Courier/Airlines/Cargo Agents etc. shall be entertained.

SIGNING OF BID DOCUMENTS:

The bid must contain the name, residence and place of business of the person or persons making the bid and must be signed and sealed by the Bidder with his usual signature. The names of all persons signing should also be typed or printed below the signature.

The Bid being submitted must be signed by a person holding a Power of Attorney authorizing him to do so, certified copies of which shall be enclosed.

The Bid submitted on behalf of companies registered with the Indian Companies Act, for the time being in force, shall be signed by persons duly authorized to submit the Bid on behalf of the Company and shall be accompanied by certified true copies of the resolutions, extracts of Articles of Association, special or general Power of Attorney etc. to show clearly the title, authority and designation of persons

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signing the Bid on behalf of the Company. Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the bid.

A bid by a person who affixes to his signature the word ‘President’, ‘Managing Director’, ‘Secretary’, ‘Agent’ or other designation without disclosing his principal will be rejected.

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

3.2 Contact Information

Communication Details: Detailed in 1.1

3.3 Bid Prices

Bidders shall quote for the entire Scope of Supply/ work with a break up of prices for individual items and Taxes & duties. The bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total price with taxes, duties & freight up to destination at various sites of Tata Power. The all-inclusive prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during the execution of the supply work, breakup of price constituents.

The quantity break up shown else-where other than Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any items not indicated in the price schedule but which are required to complete the job as per the Technical Specifications/ Scope of Work/ SLA mentioned in the tender, shall be deemed to be included in prices quoted.

3.4 Bid Currencies

Prices shall be quoted in Indian Rupees Only. It also may be noted that the denomination of Purchase Order / Outline Agreement / Rate Contract and associated Payment to Successful Bidder shall also be in Indian Rupees Only. In case Bidder intends to import any equipment, part etc and supply to Tata Power then all liability and costs related to import will rest with the Bidder. All statutory compliances, payments, expenditure etc related to importing of equipment will be responsibility of the bidder.

3.5 Period of Validity of Bids

Bids shall remain valid for 180 days from the due date of submission of the bid.

Notwithstanding clause above, Tata Power may solicit the Bidder’s consent to an extension of the Period of Bid Validity. The request and responses thereto shall be made in writing.

3.6 Alternative Bids

Bidders shall submit Bids, which comply with the Bidding documents. Alternative bids will not be considered. The attention of Bidders is drawn to the provisions regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the bidding documents.

3.7 Modifications and Withdrawal of Bids

The bidder is not allowed to modify or withdraw its bid after the Bid’s submission. The EMD as submitted along with the bid shall be liable for forfeiture in such event.

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3.8 Earnest Money Deposit (EMD)

The bidder shall furnish, as part of its bid, an EMD amounting as specified in the tender. The EMD is required to protect the Tata Power against the risk of bidder's conduct which would warrant forfeiture. The EMD shall be in following form:

- Bank Guarantee valid for 180 days after due date of submission.

The EMD shall be forfeited in case of:

a) The bidder withdraws its bid during the period of specified bid validity.

Or

- b) In case of a successful bidder, if the Bidder, within 15 days, does not
- i) accept the purchase order, or
 - ii) furnish the required Contract Performance Bank Guarantee (CPBG)

Original Bank Guarantee submitted as EMD shall be returned only after completion of award process for unsuccessful bidders and issue of Contract Performance Bank Guarantee (CPBG) for successful bidder.

4. Bid Opening & Evaluation process

4.1 Process to be confidential

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

4.2 Technical Bid Opening

Bids will be opened at Corporate Office of Tata Power as per our standard Process. The bids shall be opened internally by Tata Power. Technical bid must not contain any cost information whatsoever.

First the envelope marked "EMD" will be opened. Bids without EMD of required amount/ validity in prescribed format, shall be rejected.

Next, the technical bid of the bidders who have furnished the requisite EMD will be opened in E-Tender system.

4.3 Preliminary Examination of Bids/Responsiveness

Tata Power will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order. Tata Power may ask for submission of original documents in order to verify the documents submitted in support of qualification criteria.

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

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

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4.4 Techno Commercial Clarifications

Bidders need to ensure that the bids submitted by them are complete in all respects. To assist in the examination, evaluation and comparison of Bids, Tata Power may, at its discretion, ask the Bidder for a clarification on its Bid for any deviations with respect to the Tata Power specifications and attempt will be made to bring all bids on a common footing. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted owing to any clarifications sought by Tata Power.

4.5 Price Bid Opening

The EMD of the bidder withdrawing or substantially altering his offer at any stage after the technical bid opening will be forfeited at the sole discretion of Tata Power without any further correspondence in this regard.

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

4.6 Reverse Auction and Price Matching Option

Tata Power reserves the right to go for Reverse Auction (RA) for price negotiation and discover the most competitive price on ARIBA portal, Tata Power's official e-tendering platform. This will be decided after techno-commercial evaluation of the bids. Bidders need to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case Tata Power decides to go for RA.

Only those bidders who are techno-commercially qualified shall be eligible to participate further in RA process. However, the original H1 bidder (whose price bid is the highest post techno-commercial evaluation) shall not be allowed to participate in further RA process provided minimum three techno-commercially qualified bids are available.

For case where more than one bidders have to be awarded (including Rate Contract / Outline Agreement) Price Matching Option will be exercised. Volume of job allocated to original competitive bidder will be more than bidder who is chosen through Price Matching Option. Tata Power decision regarding work sharing shall be final and no explanation OR clarification shall be given regarding the same.

5.0 Award Decision

Tata Power will award the contract to the successful bidder whose bid has been determined to be the lowest-evaluated responsive bid as per the Evaluation Criterion mentioned at Clause 2.0. The Cost for the said calculation shall be taken as the all-inclusive cost quoted by bidder in Priced Bid Format subject to any corrections required in line with Clause 4.3 above. The decision to place purchase order/Outline Agreement/ Rate Contact solely depends on Tata Power on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that Tata Power may deem relevant.

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| The Tata Power Company Ltd |  TATA TATA POWER | <i>OPEN TENDER NOTIFICATION</i> |
| <i>Tender Reference: CC26VJS002</i> | | <i>Document Date: 10th Mar 2025</i> |

Tata Power reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without assigning any reason thereof.

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

5.1 Rate Contract / Outline Agreement

Rate Contract / Outline Agreement does not guarantee any assured business volume in Rupees or Quantity. Quantities are only indicative and specified for the purpose of readiness as per the request from Purchaser. Supplies shall be only against Firm Purchase Orders placed as per the agreed terms and conditions of Rate Contract / Outline Agreement. Purchaser shall be entitled at its discretion to place firm order for such supplies on "As and When Required Basis" without minimum take-off guarantee.

Rate Contract / Outline Agreement will have list of Items with Unit Rate and applicable Taxes and Duties. There will be a cap on value for which order which can be placed against the Rate Contract / Outline Agreement. Actual quantity ordered for each line item may differ significantly from the tentative quantity indicated in the Tender Document. One / few / all items of Rate Contract / Outline Agreement can be ordered till the Cap Value is reached.

6.0 Order of Preference/Contradiction:

In case of contradiction in any part of various documents in tender, following shall prevail in order of preference:

1. Outline Agreement/Purchase Order (with Commercial conditions)
2. Special Terms and conditions (if applicable)
3. General Terms and conditions
4. Technical Specifications

In case there is a discrepancy in the BOQ mentioned in tender (to the extent modified through subsequent Corrigendum, if any) and the bid submitted by any bidder, the description as mentioned in the tender (to the extent modified through subsequent Corrigendum, if any) shall prevail.

7.0 Ethics

Tata Power is an ethical organization and as a policy Tata Power lays emphasis on ethical practices across its entire domain. Bidder should ensure that they should abide by all the ethical norms and in no form either directly or indirectly be involved in unethical practice.

Tata Power work practices are governed by the Tata Code of Conduct. Bidder is request to refer Tata Code of Conduct Clause in General Terms and Conditions.

8.0 General Condition of Contract and Special Condition of Contracts

Any condition not mentioned above shall be applicable as per General Terms and Conditions and Special Condition of Contracts attached along with this tender.

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| The Tata Power Company Ltd |  | OPEN TENDER NOTIFICATION |
| Tender Reference: CC26VJS002 | | Document Date: 10 th Mar 2025 |

Annexure 1

Schedule Of Items

| Sr. no. | Material / Service Short Text (as per SAP) | Quantity | UoM | Unit Rate (Basic) | Total |
|---------|--------------------------------------------|----------|-----|-------------------|-------|
| | Feeder Pillar | | | | - |
| 1 | FEEDER,COMPACT FDR PLR 2 IC,630A&6 OG,CO | 470 | Nos | | - |
| 2 | PILLAR MINI 415V W/400A BUS BAR F/CABLE | 100 | Nos | | - |
| 3 | PANEL,MINI PILLAR WITH FUSES, | 80 | Nos | | |
| 4 | FEEDER,COMP. EXT FDR PLR 1 IC,630A&3O, | 210 | Nos | | |
| | LT Panel | | | | |
| 5 | LTP 3200A, 415V, 8W-800A O/G FUSE | 5 | Nos | | |
| 6 | LTP 3200A,2-1200A MCCB,2-630A&2-800 FUSE | 4 | Nos | | |
| 7 | LTP 2500A, 415V, 2MCCB & 3Fuse | 5 | Nos | | |
| 8 | LTP 2500A, 415V, 6W-630A O/G FUSE | 37 | Nos | | |
| 9 | LTP 2500A, 415V, 8W-630A O/G FUSE | 5 | Nos | | |
| 10 | LTP 2000A, 415V, 6W-630A O/G FUSE | 50 | Nos | | |
| 11 | LTP 1250A, 415V, 6W-630A O/G FUSE | 5 | Nos | | |
| | SFU | | | | |
| 12 | PANEL METERING WITH 63A SFU | 5 | Nos | | |
| 13 | PANEL METERING WITH 100A SFU & 100/5A CT | 5 | Nos | | |
| 14 | PANEL METERING WITH 125A SFU & 100/5A CT | 150 | Nos | | |
| 15 | PANEL METERING W/160A SFU & 150/5 A CT | 10 | Nos | | |
| 16 | PANEL METERING W/200A SFU & 200/5 A CT | 10 | Nos | | |
| 17 | PANEL METERING W/250A SFU & 250/5 A CT | 300 | Nos | | |
| 18 | PANEL METERING W/400A SFU & 400/5 A CT | 150 | Nos | | |
| 19 | PANEL METERING W/630A SFU & 600/5 A CT | 50 | Nos | | |
| 20 | PANEL METERING WITH SFU & CT 415V 800A | 30 | Nos | | |
| | Change over Panel | | | | |
| 21 | SWITCH CHANGEOVER W/125A METERING PANE | 60 | Nos | | |
| 22 | SWITCH CHANGEOVER 250A W/METERING PANEL | 100 | Nos | | |
| 23 | SWITCH CHANGEOVER 400A W/METERING PANEL | 100 | Nos | | |
| 24 | CHANGE OVER SWITCH 630 4P 415V/GE | 60 | Nos | | |
| 25 | SWITCH, CHANGEOVER,800A METER PANEL_FUSE | 15 | Nos | | |
| | Sub Total | | | | - |
| | GST @18% | | | | - |
| | Total with taxes | | | | - |

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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION OF 8 Way Compact Sub feeder Pillar Panels |
| ENSE-DS-2019-R01 | | Date of Issue: 28/02/2025 |

TECHNICAL SPECIFICATION

8 Way Compact Sub feeder Pillar Panels

*The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra*

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TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2019-R01

Document Title: Technical Specification of 8 Way Compact Sub feeder Pillar Panels

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|---------|----------------------------------------|------------|-------------|-----------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------|
| R01 | ENSE-DS-2019-R01 For Tendering Purpose | 28/02/25 | YMM |  | AVP |  | RMB |  |
| R00 | ENSE-DS-2019-R00 For Tendering Purpose | 22/12/2023 | YMM | -sd- | AVP | -sd- | RMB | -sd- |
| Rev No. | Remarks | Date | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | Prepared By | | Reviewed By | | Approved & Issued By | |

| Rev No. | Description | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R01 | TECHNICAL SPECIFICATION OF 8 Way Compact Sub feeder Pillar Panels | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | | 28/02/25 | 28/02/25 | 28/02/25 |

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 - 2.0 APPLICABLE STANDARDS
 - 3.0 CLIMATIC CONDITIONS OF THE INSTALLATION
 - 4.0 GENERAL TECHNICAL REQUIREMENTS
 - 5.0 GENERAL CONSTRUCTIONS
 - 6.0 NAME PLATE & MARKINGS
 - 7.0 TESTS
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 - 10.0 INSPECTION AFTER RECEIPT AT STORE
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- + ANNEXURE 1 & 2

| Rev No. | Description | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION OF 8 Way Compact Sub feeder Pillar Panels |
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| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V Sub Feeder Pillar complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the purchaser (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract. All SUBVENDOR/SUBCONTRACTOR list shall also be subject to approval by the PURCHASER (TPC) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | |
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| 2.0 | APPLICABLE STANDARDS | <p>The equipment (and the materials used) covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, IEC / International standards, with latest amendment from time to time, thereof, some of which are listed below:</p> <p>The Sub Feeder Pillar shall comply with the requirements stated in the latest editions of the following recommendations, standard and specifications:</p> <table border="1" data-bbox="427 1016 1452 1809"> <thead> <tr> <th data-bbox="427 1016 759 1088">INDIAN STANDARDS (IS)</th> <th data-bbox="759 1016 1452 1088">Title</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 1088 759 1135">IS 5039</td> <td data-bbox="759 1088 1452 1135">Specification for distribution pillars below 1000V AC</td> </tr> <tr> <td data-bbox="427 1135 759 1193">IS 5</td> <td data-bbox="759 1135 1452 1193">Colour of ready mixed paints and enamels</td> </tr> <tr> <td data-bbox="427 1193 759 1254">IS 191</td> <td data-bbox="759 1193 1452 1254">Copper Specification</td> </tr> <tr> <td data-bbox="427 1254 759 1364">IS 13703-2</td> <td data-bbox="759 1254 1452 1364">Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons</td> </tr> <tr> <td data-bbox="427 1364 759 1473">IS 5082</td> <td data-bbox="759 1364 1452 1473">Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications</td> </tr> <tr> <td data-bbox="427 1473 759 1532">IS 1359</td> <td data-bbox="759 1473 1452 1532">Electroplated Coatings of Tin</td> </tr> <tr> <td data-bbox="427 1532 759 1606">IS 1730</td> <td data-bbox="759 1532 1452 1606">Dimensions for steel plates, sheets strips and flats for general engineering purposes</td> </tr> <tr> <td data-bbox="427 1606 759 1664">IS 2551</td> <td data-bbox="759 1606 1452 1664">Danger Notice plates</td> </tr> <tr> <td data-bbox="427 1664 759 1738">IS 4759</td> <td data-bbox="759 1664 1452 1738">Hot-dip Zinc coatings on structural steel and other allied products</td> </tr> <tr> <td data-bbox="427 1738 759 1809">IS 14772</td> <td data-bbox="759 1738 1452 1809">General requirements for enclosures for accessories for household and similar fixed electrical installations</td> </tr> </tbody> </table> | INDIAN STANDARDS (IS) | Title | IS 5039 | Specification for distribution pillars below 1000V AC | IS 5 | Colour of ready mixed paints and enamels | IS 191 | Copper Specification | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons | IS 5082 | Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications | IS 1359 | Electroplated Coatings of Tin | IS 1730 | Dimensions for steel plates, sheets strips and flats for general engineering purposes | IS 2551 | Danger Notice plates | IS 4759 | Hot-dip Zinc coatings on structural steel and other allied products | IS 14772 | General requirements for enclosures for accessories for household and similar fixed electrical installations |
| INDIAN STANDARDS (IS) | Title | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5039 | Specification for distribution pillars below 1000V AC | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5 | Colour of ready mixed paints and enamels | | | | | | | | | | | | | | | | | | | | | | | |
| IS 191 | Copper Specification | | | | | | | | | | | | | | | | | | | | | | | |
| IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5082 | Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications | | | | | | | | | | | | | | | | | | | | | | | |
| IS 1359 | Electroplated Coatings of Tin | | | | | | | | | | | | | | | | | | | | | | | |
| IS 1730 | Dimensions for steel plates, sheets strips and flats for general engineering purposes | | | | | | | | | | | | | | | | | | | | | | | |
| IS 2551 | Danger Notice plates | | | | | | | | | | | | | | | | | | | | | | | |
| IS 4759 | Hot-dip Zinc coatings on structural steel and other allied products | | | | | | | | | | | | | | | | | | | | | | | |
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| R01 | TECHNICAL SPECIFICATION OF 8 Way Compact Sub feeder Pillar Panels | Yash M. Mane  28/02/25 | Ajay V. Potdar  28/02/25 | Ravindra M. Bhanage  28/02/25 |

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| IEC 60947-1 | Low-voltage switchgear and controlgear - Part 1: General rules | | | | | | | | | | | | | | | | | | | |
| IEC 61439-2 | Low-voltage switchgear and controlgear assemblies - Part 2: Power switchgear and controlgear assemblies | | | | | | | | | | | | | | | | | | | |
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| 3.0 | <p data-bbox="197 1256 408 1384">CLIMATIC CONDITIONS OF THE INSTALLATION</p> | <table border="1"> <tbody> <tr> <td data-bbox="443 913 517 943">1</td> <td data-bbox="517 913 986 943">Maximum ambient temperature</td> <td data-bbox="986 913 1442 943">43 deg.C</td> </tr> <tr> <td data-bbox="443 943 517 972">2</td> <td data-bbox="517 943 986 972">Max. Daily average ambient temp</td> <td data-bbox="986 943 1442 972">35 deg.C</td> </tr> <tr> <td data-bbox="443 972 517 1001">3</td> <td data-bbox="517 972 986 1001">Min Ambient Temperature</td> <td data-bbox="986 972 1442 1001">07 deg.C</td> </tr> <tr> <td data-bbox="443 1001 517 1030">4</td> <td data-bbox="517 1001 986 1030">Maximum Relative Humidity</td> <td data-bbox="986 1001 1442 1030">100%</td> </tr> <tr> <td data-bbox="443 1030 517 1059">5</td> <td data-bbox="517 1030 986 1059">Minimum Relative Humidity</td> <td data-bbox="986 1030 1442 1059">40%</td> </tr> <tr> <td data-bbox="443 1059 517 1088">6</td> <td data-bbox="517 1059 986 1088">Average No. of thunderstorm per annum</td> <td data-bbox="986 1059 1442 1088">50</td> </tr> <tr> <td data-bbox="443 1088 517 1117">7</td> <td data-bbox="517 1088 986 1117">Average Annual Rainfall</td> <td data-bbox="986 1088 1442 1117">2380mm</td> </tr> <tr> <td data-bbox="443 1117 517 1146">8</td> <td data-bbox="517 1117 986 1146">Average No. of rainy days per annum</td> <td data-bbox="986 1117 1442 1146">115</td> </tr> <tr> <td data-bbox="443 1146 517 1176">9</td> <td data-bbox="517 1146 986 1176">Rainy months</td> <td data-bbox="986 1146 1442 1176">June to Oct.</td> </tr> <tr> <td data-bbox="443 1176 517 1205">10</td> <td data-bbox="517 1176 986 1205">Altitude above MSL not exceeding</td> <td data-bbox="986 1176 1442 1205">300 meters</td> </tr> <tr> <td data-bbox="443 1205 517 1234">11</td> <td data-bbox="517 1205 986 1234">Average Air Pressure</td> <td data-bbox="986 1205 1442 1234">29.6-inch Hg</td> </tr> </tbody> </table> <p data-bbox="427 1697 1453 1816">Atmosphere is generally laden with mild acid and dust suspended during summer months and subjected to fog in winter months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.</p> | 1 | Maximum ambient temperature | 43 deg.C | 2 | Max. Daily average ambient temp | 35 deg.C | 3 | Min Ambient Temperature | 07 deg.C | 4 | Maximum Relative Humidity | 100% | 5 | Minimum Relative Humidity | 40% | 6 | Average No. of thunderstorm per annum | 50 | 7 | Average Annual Rainfall | 2380mm | 8 | Average No. of rainy days per annum | 115 | 9 | Rainy months | June to Oct. | 10 | Altitude above MSL not exceeding | 300 meters | 11 | Average Air Pressure | 29.6-inch Hg |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Max. Daily average ambient temp | 35 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Min Ambient Temperature | 07 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Maximum Relative Humidity | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Minimum Relative Humidity | 40% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Average No. of thunderstorm per annum | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Average Annual Rainfall | 2380mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Average No. of rainy days per annum | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Rainy months | June to Oct. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Altitude above MSL not exceeding | 300 meters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Average Air Pressure | 29.6-inch Hg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION OF 8 Way Compact Sub feeder Pillar Panels |
| ENSE-DS-2019-R01 | | Date of Issue: 28/02/2025 |

| 4.0 | GENERAL TECHNICAL REQUIREMENTS | <table border="1"> <thead> <tr> <th data-bbox="430 224 502 302">Sr. No.</th> <th data-bbox="502 224 917 302">Item Description</th> <th data-bbox="917 224 1460 302">Tata Power Requirement</th> </tr> </thead> <tbody> <tr> <td data-bbox="430 302 502 436">1</td> <td data-bbox="502 302 917 436">Manufacturer</td> <td data-bbox="917 302 1460 436"> Name Manufacturer Address Contact telephone no </td> </tr> <tr> <td data-bbox="430 436 502 548">2</td> <td data-bbox="502 436 917 548">Basic design</td> <td data-bbox="917 436 1460 548">A totally enclosed free standing floor mounted self-supporting metal sheet cubical containing bus-bars connected to distribution feeders protected Complied through HRC type fuse base.</td> </tr> <tr> <td data-bbox="430 548 502 593">3</td> <td data-bbox="502 548 917 593">Main bus bar rating</td> <td data-bbox="917 548 1460 593">As per Specification</td> </tr> <tr> <td data-bbox="430 593 502 638">4</td> <td data-bbox="502 593 917 638">No of incoming feeders</td> <td data-bbox="917 593 1460 638">Quantity- 2 nos</td> </tr> <tr> <td data-bbox="430 638 502 683"></td> <td data-bbox="502 638 917 683">Incomer Rating</td> <td data-bbox="917 638 1460 683">Rating in Amp 630A</td> </tr> <tr> <td data-bbox="430 683 502 728">4a</td> <td data-bbox="502 683 917 728">No of outgoing feeders (Type 8 way)</td> <td data-bbox="917 683 1460 728">Quantity- 6 nos</td> </tr> <tr> <td data-bbox="430 728 502 772"></td> <td data-bbox="502 728 917 772">Outgoing Rating</td> <td data-bbox="917 728 1460 772">Rating in Amp 315A</td> </tr> <tr> <td data-bbox="430 772 502 817">5</td> <td data-bbox="502 772 917 817">Panel construction</td> <td data-bbox="917 772 1460 817">CRCA sheet steel</td> </tr> <tr> <td data-bbox="430 817 502 862">6</td> <td data-bbox="502 817 917 862">Panel enclosure class</td> <td data-bbox="917 817 1460 862">IP54 - ingress protection (for outdoor installation)</td> </tr> <tr> <td data-bbox="430 862 502 907">7</td> <td data-bbox="502 862 917 907">Sheet thickness</td> <td data-bbox="917 862 1460 907">As per Specification</td> </tr> <tr> <td data-bbox="430 907 502 952">8</td> <td data-bbox="502 907 917 952">Door type for front access</td> <td data-bbox="917 907 1460 952">Double door for feeder pillar</td> </tr> <tr> <td data-bbox="430 952 502 1041">9</td> <td data-bbox="502 952 917 1041">Door hinges</td> <td data-bbox="917 952 1460 1041">Minimum three anti-theft type hinges self-locking type.</td> </tr> <tr> <td data-bbox="430 1041 502 1086">10</td> <td data-bbox="502 1041 917 1086">Padlocking facility</td> <td data-bbox="917 1041 1460 1086">As per Specification</td> </tr> <tr> <td data-bbox="430 1086 502 1176">11</td> <td data-bbox="502 1086 917 1176">Master key for all doors</td> <td data-bbox="917 1086 1460 1176">Identical for all panels, 1 no./ panel</td> </tr> <tr> <td data-bbox="430 1176 502 1220">12</td> <td data-bbox="502 1176 917 1220">External steel hardware</td> <td data-bbox="917 1176 1460 1220">Galvanized nut & bolts 8.8 Grade</td> </tr> <tr> <td data-bbox="430 1220 502 1332">13</td> <td data-bbox="502 1220 917 1332">Phase & neutral Bus bar</td> <td data-bbox="917 1220 1460 1332">Aluminium grade 19501 (H2) as per IS 5082</td> </tr> <tr> <td data-bbox="430 1332 502 1400">14</td> <td data-bbox="502 1332 917 1400">Current Density of Aluminum busbars</td> <td data-bbox="917 1332 1460 1400">1 A/sq mm</td> </tr> <tr> <td data-bbox="430 1400 502 1489">15</td> <td data-bbox="502 1400 917 1489">Bus bar colour coding for R, Y, B & neutral</td> <td data-bbox="917 1400 1460 1489">Heat shrinkable sleeves with colour Red, Yellow, Blue & Black respectively</td> </tr> <tr> <td data-bbox="430 1489 502 1534">16</td> <td data-bbox="502 1489 917 1534">Bus bar size in mm for 630 A I/C</td> <td data-bbox="917 1489 1460 1534">80x10mm for Phase & Neutral (Minimum)</td> </tr> <tr> <td data-bbox="430 1534 502 1579">17</td> <td data-bbox="502 1534 917 1579">Bus bar size in mm for 315A O/G</td> <td data-bbox="917 1534 1460 1579">1x40x10mm for Phase (Minimum)</td> </tr> <tr> <td data-bbox="430 1579 502 1624">18</td> <td data-bbox="502 1579 917 1624">Earth bus size</td> <td data-bbox="917 1579 1460 1624">50x10 mm GI</td> </tr> <tr> <td data-bbox="430 1624 502 1713">19</td> <td data-bbox="502 1624 917 1713">Main bus bar short circuit withstand capacity</td> <td data-bbox="917 1624 1460 1713">Above 50kA for 1 sec as per IEC 61439</td> </tr> <tr> <td data-bbox="430 1713 502 1780">20</td> <td data-bbox="502 1713 917 1780">Permissible maximum temperature rise above ambient of 40°C</td> <td data-bbox="917 1713 1460 1780">Busbar: 45 deg C Terminals: 65 deg C</td> </tr> <tr> <td data-bbox="430 1780 502 1825">21</td> <td data-bbox="502 1780 917 1825">Bus bar support insulators</td> <td data-bbox="917 1780 1460 1825">As per IS13410 DMC, 1100V grade</td> </tr> </tbody> </table> | Sr. No. | Item Description | Tata Power Requirement | 1 | Manufacturer | Name Manufacturer Address Contact telephone no | 2 | Basic design | A totally enclosed free standing floor mounted self-supporting metal sheet cubical containing bus-bars connected to distribution feeders protected Complied through HRC type fuse base. | 3 | Main bus bar rating | As per Specification | 4 | No of incoming feeders | Quantity- 2 nos | | Incomer Rating | Rating in Amp 630A | 4a | No of outgoing feeders (Type 8 way) | Quantity- 6 nos | | Outgoing Rating | Rating in Amp 315A | 5 | Panel construction | CRCA sheet steel | 6 | Panel enclosure class | IP54 - ingress protection (for outdoor installation) | 7 | Sheet thickness | As per Specification | 8 | Door type for front access | Double door for feeder pillar | 9 | Door hinges | Minimum three anti-theft type hinges self-locking type. | 10 | Padlocking facility | As per Specification | 11 | Master key for all doors | Identical for all panels, 1 no./ panel | 12 | External steel hardware | Galvanized nut & bolts 8.8 Grade | 13 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 | 14 | Current Density of Aluminum busbars | 1 A/sq mm | 15 | Bus bar colour coding for R, Y, B & neutral | Heat shrinkable sleeves with colour Red, Yellow, Blue & Black respectively | 16 | Bus bar size in mm for 630 A I/C | 80x10mm for Phase & Neutral (Minimum) | 17 | Bus bar size in mm for 315A O/G | 1x40x10mm for Phase (Minimum) | 18 | Earth bus size | 50x10 mm GI | 19 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec as per IEC 61439 | 20 | Permissible maximum temperature rise above ambient of 40°C | Busbar: 45 deg C Terminals: 65 deg C | 21 | Bus bar support insulators | As per IS13410 DMC, 1100V grade |
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| | | Sr. No. | Item Description | Tata Power Requirement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | Manufacturer | Name Manufacturer Address Contact telephone no | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | Basic design | A totally enclosed free standing floor mounted self-supporting metal sheet cubical containing bus-bars connected to distribution feeders protected Complied through HRC type fuse base. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3 | Main bus bar rating | As per Specification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 4 | No of incoming feeders | Quantity- 2 nos | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Incomer Rating | Rating in Amp 630A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 4a | No of outgoing feeders (Type 8 way) | Quantity- 6 nos | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Outgoing Rating | Rating in Amp 315A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 5 | Panel construction | CRCA sheet steel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 6 | Panel enclosure class | IP54 - ingress protection (for outdoor installation) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 7 | Sheet thickness | As per Specification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 8 | Door type for front access | Double door for feeder pillar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 9 | Door hinges | Minimum three anti-theft type hinges self-locking type. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10 | Padlocking facility | As per Specification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 11 | Master key for all doors | Identical for all panels, 1 no./ panel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 12 | External steel hardware | Galvanized nut & bolts 8.8 Grade | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 13 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 14 | Current Density of Aluminum busbars | 1 A/sq mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 15 | Bus bar colour coding for R, Y, B & neutral | Heat shrinkable sleeves with colour Red, Yellow, Blue & Black respectively | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 16 | Bus bar size in mm for 630 A I/C | 80x10mm for Phase & Neutral (Minimum) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | Bus bar size in mm for 315A O/G | 1x40x10mm for Phase (Minimum) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | Earth bus size | 50x10 mm GI | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec as per IEC 61439 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | Permissible maximum temperature rise above ambient of 40°C | Busbar: 45 deg C Terminals: 65 deg C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | Bus bar support insulators | As per IS13410 DMC, 1100V grade | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Rev No. | Description | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| R01 | TECHNICAL SPECIFICATION OF 8 Way Compact Sub feeder Pillar Panels | Yash M. Mane  28/02/25 | Ajay V. Potdar  28/02/25 | Ravindra M. Bhanage  28/02/25 |

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| | | <table border="1"> <tr> <td>22</td> <td>Number of Bus Bar Supports</td> <td>2 nos per phase & neutral</td> </tr> <tr> <td>23</td> <td>Incoming Cable</td> <td>2 Runs x 4C 300 Sq.mm</td> </tr> <tr> <td>24</td> <td>Outgoing Cable</td> <td>1 Run X 4C 300 Sq.mm</td> </tr> <tr> <td>25</td> <td>Fuse Base</td> <td>6 no. 400A, Per phase & 2 no. 630A, Per phase</td> </tr> <tr> <td>25a</td> <td>Make (Fuse Base & Fuse Links)</td> <td>Schneider/ L&T(L&K)/ Siemens/ GE Power Controls/ Jean Muller / Bussman.</td> </tr> <tr> <td>25b</td> <td>Fuses (630A, 315A)</td> <td>HRC plug-in type</td> </tr> <tr> <td>26</td> <td>Gland plate at panel bottom</td> <td>Cold rolled close annealed (CRCA) sheet steel 3 mm thick. It shall be possible to temporarily detach the base plate for installation and connection of cables. SS nuts and bolts. Grommet: Fire retardant EPDM rubber grommet shall be provided on holes for cable entry.</td> </tr> <tr> <td>27</td> <td>Cable termination clearance</td> <td>300mm minimum from gland plate</td> </tr> <tr> <td>28</td> <td>Earth studs on both side of panel bottom</td> <td>With M10 galvanized steel nut bolts</td> </tr> <tr> <td>29</td> <td>Panel maximum dimensions in mm</td> <td>Width X Depth X Height</td> </tr> <tr> <td></td> <td>-</td> <td>950 mm X 400 mm X 1650 mm (or less)</td> </tr> <tr> <td rowspan="2">30</td> <td rowspan="2">Clearance between live parts</td> <td>Phase - phase: 25 mm (minimum)</td> </tr> <tr> <td>Phase - earth: 20 mm (minimum)</td> </tr> <tr> <td>31</td> <td>Continuous rated operating voltage</td> <td>415 volt +/- 10%</td> </tr> <tr> <td>32</td> <td>High voltage withstand capacity</td> <td>2000 volt at 50 Hz for 1minute</td> </tr> <tr> <td>33</td> <td>Insulation resistance ph-ph & ph-earth</td> <td>Minimum 100MOhm with 500V Megger.</td> </tr> <tr> <td>34</td> <td>Surface preparation for painting</td> <td>Sand blasting or 7 tank process</td> </tr> <tr> <td>35</td> <td>Painting</td> <td>Power coated grade A PU paint min thickness 120 micron</td> </tr> <tr> <td>36</td> <td>Shade</td> <td>International Orange shade No 592 of IS-5</td> </tr> <tr> <td>37</td> <td>Fluorescent strip</td> <td>2 Nos. retro reflective sticker 3M (should reflect vehicular lights during night) strips of Yellow colour each of 75 mm width shall be provided on all sides.</td> </tr> <tr> <td>38</td> <td>Panel drawing</td> <td>To be submitted with GTP</td> </tr> <tr> <td>39</td> <td>Bulb</td> <td>LED</td> </tr> <tr> <td>40</td> <td>Type Test certificate</td> <td>Type Test to be conducted on one unit of this design.</td> </tr> </table> | 22 | Number of Bus Bar Supports | 2 nos per phase & neutral | 23 | Incoming Cable | 2 Runs x 4C 300 Sq.mm | 24 | Outgoing Cable | 1 Run X 4C 300 Sq.mm | 25 | Fuse Base | 6 no. 400A, Per phase & 2 no. 630A, Per phase | 25a | Make (Fuse Base & Fuse Links) | Schneider/ L&T(L&K)/ Siemens/ GE Power Controls/ Jean Muller / Bussman. | 25b | Fuses (630A, 315A) | HRC plug-in type | 26 | Gland plate at panel bottom | Cold rolled close annealed (CRCA) sheet steel 3 mm thick. It shall be possible to temporarily detach the base plate for installation and connection of cables. SS nuts and bolts. Grommet: Fire retardant EPDM rubber grommet shall be provided on holes for cable entry. | 27 | Cable termination clearance | 300mm minimum from gland plate | 28 | Earth studs on both side of panel bottom | With M10 galvanized steel nut bolts | 29 | Panel maximum dimensions in mm | Width X Depth X Height | | - | 950 mm X 400 mm X 1650 mm (or less) | 30 | Clearance between live parts | Phase - phase: 25 mm (minimum) | Phase - earth: 20 mm (minimum) | 31 | Continuous rated operating voltage | 415 volt +/- 10% | 32 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute | 33 | Insulation resistance ph-ph & ph-earth | Minimum 100MOhm with 500V Megger. | 34 | Surface preparation for painting | Sand blasting or 7 tank process | 35 | Painting | Power coated grade A PU paint min thickness 120 micron | 36 | Shade | International Orange shade No 592 of IS-5 | 37 | Fluorescent strip | 2 Nos. retro reflective sticker 3M (should reflect vehicular lights during night) strips of Yellow colour each of 75 mm width shall be provided on all sides. | 38 | Panel drawing | To be submitted with GTP | 39 | Bulb | LED | 40 | Type Test certificate | Type Test to be conducted on one unit of this design. |
| 22 | Number of Bus Bar Supports | 2 nos per phase & neutral | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | Incoming Cable | 2 Runs x 4C 300 Sq.mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | Outgoing Cable | 1 Run X 4C 300 Sq.mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | Fuse Base | 6 no. 400A, Per phase & 2 no. 630A, Per phase | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25a | Make (Fuse Base & Fuse Links) | Schneider/ L&T(L&K)/ Siemens/ GE Power Controls/ Jean Muller / Bussman. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25b | Fuses (630A, 315A) | HRC plug-in type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | Gland plate at panel bottom | Cold rolled close annealed (CRCA) sheet steel 3 mm thick. It shall be possible to temporarily detach the base plate for installation and connection of cables. SS nuts and bolts. Grommet: Fire retardant EPDM rubber grommet shall be provided on holes for cable entry. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | Cable termination clearance | 300mm minimum from gland plate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | Earth studs on both side of panel bottom | With M10 galvanized steel nut bolts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | Panel maximum dimensions in mm | Width X Depth X Height | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | - | 950 mm X 400 mm X 1650 mm (or less) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | Clearance between live parts | Phase - phase: 25 mm (minimum) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Phase - earth: 20 mm (minimum) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | Continuous rated operating voltage | 415 volt +/- 10% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | Insulation resistance ph-ph & ph-earth | Minimum 100MOhm with 500V Megger. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | Surface preparation for painting | Sand blasting or 7 tank process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | Painting | Power coated grade A PU paint min thickness 120 micron | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | Shade | International Orange shade No 592 of IS-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | Fluorescent strip | 2 Nos. retro reflective sticker 3M (should reflect vehicular lights during night) strips of Yellow colour each of 75 mm width shall be provided on all sides. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | Panel drawing | To be submitted with GTP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | Bulb | LED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | Type Test certificate | Type Test to be conducted on one unit of this design. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| 5.0 | GENERAL CONSTRUCTION | <p>Compact Sub feeder Pillar - TPN Bus bar with 2 fuses (for incomer) & 6 fuses (for outgoing).</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | Neutral bus | At bottom of panel, with M10 Nut- Bolts for terminating incoming & outgoing Pillar cable neutral circuit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Earth Bus | Earth strip of 50X10mm GI | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A. Enclosure: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Sr. No. | Parameter | Requirement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 6 | Design at top | Sloping canopy at top so that rain water does not accumulate. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Minimum 10 degree slanting slope and extended 50 mm outside | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Lifting lug- 2 nos. lug welded on top. Eyebolt of suitable sizes shall be provided for lifting arrangements. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Degree of Protection | IP54 suitable for outdoor installation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Gland plate at panel bottom | Mild Steel 3 mm thick | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Removable detachable base plate per cable circuit. It shall be possible to temporarily detach the base plate for installation and connection of cables. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SS nuts and bolts. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | painting on panel | Paint shall have good colour retention, UV and weather resistant "STICK NO BILLS" to be painted on both sides of the Compact Sub Feeder Pillar with Black Colour on Yellow Background. | | | | | | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|-------------|-----|------------------|----------------------------------------------------------------|---|-----------|------------------|---|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 10 | Dimensions (max) | | <table border="1"> <tr> <td>Width</td> <td>Depth</td> <td>Height</td> </tr> <tr> <td>950</td> <td>400</td> <td>1650</td> </tr> </table> | Width | Depth | Height | 950 | 400 | 1650 | | | | | | |
| Width | Depth | Height | | | | | | | | | | | | | | |
| 950 | 400 | 1650 | | | | | | | | | | | | | | |
| | 11 | Louvers | | The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on side's portion. The louvers shall have fine wire mesh. Vermin Proof should be done with gaskets. (Minimum 2 Nos on each sides) | | | | | | | | | | | | |
| | 12 | Paint shade | | International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint. | | | | | | | | | | | | |
| | 13 | Surface preparation for painting | | Sand blasting or 7 tank process followed by powder coating | | | | | | | | | | | | |
| | 14 | Foundation Bolts | | Required Number of Foundation Bolts to be supplied with the panel. | | | | | | | | | | | | |
| | 15 | External hardware | | Galvanized steel nut & bolts, Yellow zinc plated with grade 8.8 for Electrical contacts. Other hardware of grade 4.6 | | | | | | | | | | | | |
| | 16 | Clearance | | Minimum Phase to phase clearance of 25mm and Phase to Neutral / Earth clearance of 20mm shall be provided in the panel. | | | | | | | | | | | | |
| | 17 | Bolted Covers | | Panel Should have internally bolted, removable back cover with handles. | | | | | | | | | | | | |
| | 18 | Insulation sheets | | All enclosure shall be covered with bolted min 1.5 mm thick SMC/FRP sheets from inside. | | | | | | | | | | | | |
| B. Doors: | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Parameter</th> <th>Requirement</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Material of door</td> <td>Cold Rolled Close Annealed (CRCA) sheet steel - powder coated.</td> </tr> <tr> <td>2</td> <td>Thickness</td> <td>Thickness - 2 mm</td> </tr> <tr> <td>3</td> <td>Type of Door arrangement</td> <td>The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions. For Compact Sub Feeder Pillar center opening double door on front & rear sides.</td> </tr> </tbody> </table> | | | | | Sr. No. | Parameter | Requirement | 1 | Material of door | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | 2 | Thickness | Thickness - 2 mm | 3 | Type of Door arrangement | The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions. For Compact Sub Feeder Pillar center opening double door on front & rear sides. |
| Sr. No. | Parameter | Requirement | | | | | | | | | | | | | | |
| 1 | Material of door | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | | | | | | | | | | | | | | |
| 2 | Thickness | Thickness - 2 mm | | | | | | | | | | | | | | |
| 3 | Type of Door arrangement | The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions. For Compact Sub Feeder Pillar center opening double door on front & rear sides. | | | | | | | | | | | | | | |
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| | | 4 | Insulation | All doors shall be covered with min 1.5 mm thick SMC/FRP sheets. |
| | | 5 | Hinges | <p>Minimum 3 Nos. anti-theft hinges for each door. Hinges shall not be visible from outside and should not be removable.</p> <p>Material of hinges and screws: Heavy duty stainless steel (SS) Material and <i>Hinges Pin and Socket to be of Brass to avoid corrosion.</i></p> <p>Hinges shall be of such construction that the doors can be swung open by not less than 120 deg.</p> |
| | | 6 | Engraving | SLD shall be engraved & pasted on inside part of door |
| | | 7 | Gasket | The panel shall be provided with gasket all round the perimeter of covers, gland plates, removable covers and doors |
| | | 8 | Door handles | On front |
| | | 9 | Paint shade | <p>International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint.</p> <p>2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides.</p> |
| | | 10 | Surface preparation for painting | Sand blasting or 7 tank process followed by powder coating |

C. Lock:

| Sr. No. | Parameter | Requirement |
|---------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Arrangement | 3 types of lock arrangement: a) Padlock b) Sliding Bolt latch c) Door latch on inner side of door: Tower bolts shall be provided at top and bottom |
| 2 | Material of locking mechanism | a) For Padlock: Same as that of enclosure b) Sliding Bolt latch of Aluminium c) For Door latch on inner side of door - Stainless Steel |

D. Cable Connection:

| Sr. No. | Parameter | Requirement |
|---------|-----------------------------------------------|-------------------------------------------------------------------------------------------|
| 1 | Cable entry direction | Cable entry shall be from bottom of Compact Sub Feeder Pillar. |
| 2 | Cable termination clearance from gland plate. | 300 mm minimum |
| 3 | Cable termination | All cable terminations shall be from the front side of the Compact Sub Feeder Pillar only |

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E. Bus- bars:

Busbars shall be of electrolytic grade aluminium with Bakelite shrouding, rated for 800 A, 50 kA for 1 sec and shall have adequate cross section to carry the continuous rated current and short time current. Main Busbar should be continuous/ without any joint. All bus bars, bus taps and joints shall be insulated. Neutral bus bar shall be provided on rear side & rated for full bus bar rating.

| Sr. No. | Parameter | Requirement | |
|---------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1 | Material grade | Phase & Neutral bus-bars as per IS 5082 - Aluminium grade 19501 (H2). | |
| 2 | Bus-bar colour coding for R, Y, B & Neutral | Heat shrinkable insulation sleeves (1.1 kV voltage grade and min. Class A insulation class) of colour Red, Yellow, Blue and Black respectively. | |
| 3 | Bus-bar size (in mm) | 2x40x10mm for Phase & Neutral (Al) | |
| 4 | Bus-bar configuration | Single bus-bars (per phase and neutral) shall be provided. | |
| 5 | Bus-bar arrangement | Horizontally placed, with R phase bus at top. | |
| 6 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) | |
| 7 | Bus-bar support insulators | 2 nos per phase and neutral | |
| 8 | Cable size | Incoming | Outgoing |
| | | 2 Runs of 4C x 300 sq.mm. | 1 Run of 4C x 300 sq.mm. |

F. Panel Configuration:

| Sr. No. | Parameter | Requirement |
|---------|-----------------|-------------|
| 1 | No. of Incoming | 2 |
| 2 | No. of outgoing | 6 |

G. Earthing:

| Sr. No. | Parameter | Requirement |
|---------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Earth studs | On both sides of panel bottom. Shall be provide with M10 galvanized steel nut bolts washers. The earthing studs shall be welded from inside the enclosure. |
| 2 | Earth bus-bar | To be provided at panel bottom. 50 x 10 mm GI. The earth bus-bar shall be internally connected to two separate earth terminals located outside (on both sides of enclosure 50 mm protruded outside). The earth bus-bar shall be located at sufficient height from the gland plate. |

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| 3 | Flexible earth connection to doors | Flexible PVC Copper wire 1.5 sq.mm. with green colour insulation on all doors. |
| 4 | Body Earthing | All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of green coloured braided copper conductors of adequate size |
| 5 | Neutral Earth link | Earth Bus and Neutral Bus to be shorted with 50 x 10 mm GI link. |

H. Fuse and Fuse base:

| Sr. No. | Parameter | Requirement |
|---------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Type of HRC fuse | Knife type DIN HRC fuse with fuse links as per IEC 60269-1, with tinned copper contacts. |
| 2 | Fuse puller | It shall be possible to replace the fuses on live system without compromising on safety. |
| 3 | Fuse base current carrying part | Tin plated copper (with spring) as IS 191 |
| 4 | Fuse base material | DMC |
| 5 | Fuse fixing with bus-bars | Bolted type connection |
| 6 | Fuse links | Incoming: 630 A Type 3 Outgoing: 315 A Type 2 |
| 7 | Fuse Base | Fuse base shall have adequate contact surface with the busbars provided to ensure that no local heating takes place. Incoming 2 nos, 630A Outgoing 6 Nos, 400 A |
| 8 | Fuse Outlet Clearances | Clearance of minimum 100mm between each fuse outlet and 125mm between fuse outlet and body of panel to be maintained. |

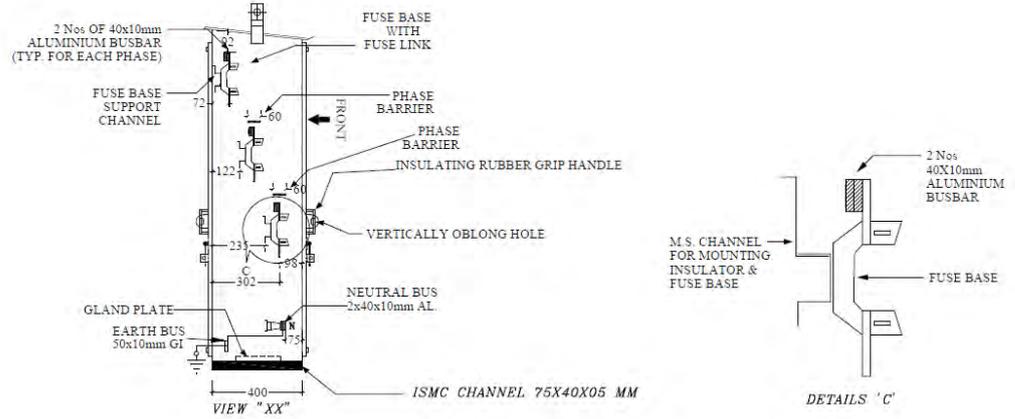
I. Lighting Provision:

| Sr. No. | Parameter | Requirement |
|---------|------------------------|------------------------------------------------------------------------------|
| 1 | Light bulb with holder | 240 V LED bulb along with lamp holder, controlled through 2 Amp SP MCB. |
| 2 | Power Socket | 240 V Single Phase 5/15 Amp five pin socket controlled through 15 Amp SP MCB |

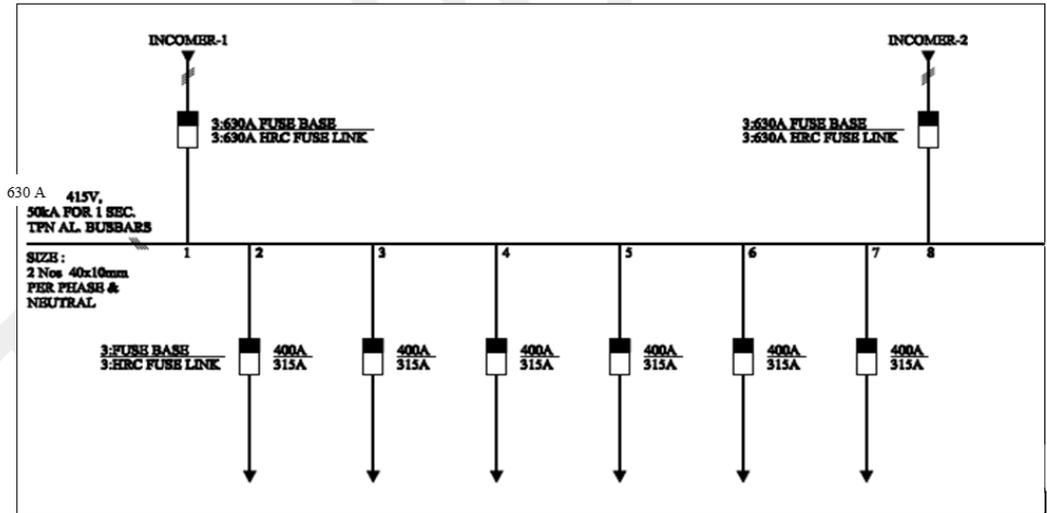
J. Danger Board / Branding:

| Sr. No. | Parameter | Requirement |
|---------|----------------|---------------------------------------------------------------------------------------------------------------------------------|
| 1 | Danger Board | Danger boards shall be provided in local language also on the on front & rear cover with white background and with red letters. |
| 2 | Danger Marking | Front and rear side danger making with skull and bones with mention of voltage level of |

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SLD:



6.0 NAME PLATE & MARKINGS

- 6.1 Name plate- On front door top left side-showing
 - 1) Purchaser name & PO number.
 - 2) Manufacturer name
 - 3) Month / year of manufacturing
 - 4) 'Property of Tata Power'
 - 5) Feeder pillar serial number to be provided.
 - 6) Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown in Annexure-1.

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| 7.0 | TESTS | <p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Sub Feeder Pillar' in addition to others specified in IS/IEC standards.</p> <p>*In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------|------------|--------------------|---|-----------------------------------------|---------------|---------|---|---------------------------------------|---------------|---------|---|-----------------------------------------|---------------|---------|---|--------------------------------------------------|---------------|---------|---|--------------------------------------|---------------|---------|
| 7.1 | TYPE TEST | <p>Type test - Only type tested components – Insulators & aluminium bus bar shall be accepted.</p> <p>For Enclosure with busbar</p> <table border="1" data-bbox="422 618 1452 974"> <thead> <tr> <th>Sr. No.</th> <th>Test</th> <th>Clause No.</th> <th>Reference Standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Verification of temperature-rise limits</td> <td>Clause No 8.2</td> <td>IS 5039</td> </tr> <tr> <td>2</td> <td>Verification of dielectric properties</td> <td>Clause No 8.3</td> <td>IS 5039</td> </tr> <tr> <td>3</td> <td>Verification of short-circuits strength</td> <td>Clause No 8.4</td> <td>IS 5039</td> </tr> <tr> <td>4</td> <td>Verification of clearance and creepage distances</td> <td>Clause No 8.5</td> <td>IS 5039</td> </tr> <tr> <td>5</td> <td>Verification of degree of protection</td> <td>Clause No 8.6</td> <td>IS 5039</td> </tr> </tbody> </table> | Sr. No. | Test | Clause No. | Reference Standard | 1 | Verification of temperature-rise limits | Clause No 8.2 | IS 5039 | 2 | Verification of dielectric properties | Clause No 8.3 | IS 5039 | 3 | Verification of short-circuits strength | Clause No 8.4 | IS 5039 | 4 | Verification of clearance and creepage distances | Clause No 8.5 | IS 5039 | 5 | Verification of degree of protection | Clause No 8.6 | IS 5039 |
| Sr. No. | Test | Clause No. | Reference Standard | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Verification of temperature-rise limits | Clause No 8.2 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Verification of dielectric properties | Clause No 8.3 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Verification of short-circuits strength | Clause No 8.4 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Verification of clearance and creepage distances | Clause No 8.5 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Verification of degree of protection | Clause No 8.6 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 7.2 | ROUTINE TEST | <ol style="list-style-type: none"> 1) Visual inspection & dimensional check 2) Insulation resistance test 3) HV test | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.3 | ACCEPTANCE TEST | <ol style="list-style-type: none"> 1) Verification of clearance and creepage distance 2) Paint thickness check 3) Paint Shade 4) Wiring checks 5) Insulation resistance test 6) 1 unit from 1st lot shall be tested for Temperature rise test with fuses. (Bidder to arrange for the same) 7) HV Test 8) Visual inspection & dimensional check | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | TYPE TEST CERTIFICATES | <p>Bidder shall furnish the type test report of 'Feeder Pillar of same design' for the tests as mentioned in Clause no.7 of this specification as per reference standards. Complete set of Type Tests shall be conducted at CPR/ERDA/NABL accredited laboratory. Type test should have been conducted in certified test laboratories during the period not exceeding 10 years from the date of opening the bid. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER COMPANY.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design</p> | | | | | | | | | | | | | | | | | | | | | | | | |

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| | | <p>change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> <p>Bidders shall submit Type Test Undertaking for conducting & submit report with 60 days of Outline Agreement.</p> | | | |
| 9.0 | PRE-DESPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY 's representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY. Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <ul style="list-style-type: none"> a) Test reports b) MDCC issued by TATA POWER COMPANY c) Invoice in duplicate d) Packing list e) Drawings & catalogue f) Delivery Challan g) Other Documents (as applicable). | | | |
| 10. | INSPECTION AFTER RECEIPT AT STORES | <p>The material received at TATA POWER Store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to TATA POWER COMPANY.</p> <p>If any deviation or anomaly observed at this stage same need to be rectified by bidder at bidders own cost at earliest. The delay in rectification shall lead to any contractual penalty.</p> | | | |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects at</p> | | | |

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| | | <p>its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> | |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.</p> <p>No single use plastic to be used in packing material. Packing should be done with environment friendly recyclable materials.</p> | |
| 13.0 | TENDER SAMPLE | Not applicable. | |
| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> <p>TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections.</p> <p>If anything missing in QAP and required as per other clauses of this document, bidder is liable to perform the same without cost implication.</p> | |
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards | |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA | |

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| | | Power will be treated as first day for assessment of LD (if applicable). | | | | | | |
|-------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|------------------------------------------|--|--|--|
| 17.0 | SPARES, ACCESSORIES AND TOOLS | Keys of door, 1 set of Fuse Puller with every 30 units. | | | | | | |
| 18.0 | DRAWINGS AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid. All the documents & drawings shall be in English language</p> <p>a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates g) Any other technical document, if required</p> | | | | | | |
| 19.0 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS: | Clause wise compliance of this specification is to be submitted with bid documents. | | | | | | |
| 20.0 | SCHEDULE "B" DEVIATIONS | <p style="text-align: center;"><u>(TO BE ENCLOSED WITH TECHNICAL BID)</u></p> <p>All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">S.No.</th> <th style="width: 20%;">Clause No.</th> <th style="width: 60%;">Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"></td> <td></td> <td></td> </tr> </tbody> </table> <p>We confirm that there are no deviations apart from those detailed above.</p> <p>Seal of the Company:</p> <p>Designation</p> <p>Signature</p> | S.No. | Clause No. | Details of deviation with justifications | | | |
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Annexure – I

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Tata Power Logo Colour



Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.



Centre aligned - Stacked (Preferred)

Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.



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Annexure 2: Inspection Testing Plan

- 1) Verification of clearance and creepage distance
- 2) Paint thickness check
- 3) Paint Shade
- 4) Wiring checks
- 5) Insulation resistance test
- 6) 1 unit from 1st lot shall be tested for Temperature rise test with fuses. (Bidder to arrange for the same)
- 7) HV Test
- 8) Visual inspection & dimensional check

TATA POWER

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TECHNICAL SPECIFICATION

4 Way Extensible Compact Sub feeder Pillar Panel

*The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra*

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TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2025-R01

Document Title: Technical Specification of 4 Way Extensible Compact Sub feeder Pillar Panel

| | | | | | | | | |
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| R00 | ENSE-DS-2025-R01 For Tendering Purpose | 28/02/25 | YMM |  | AVP |  | RMB |  |
| R00 | ENSE-DS-2025-R00 For Tendering Purpose | 21/12/2023 | YMM | -sd- | AVP | -sd- | RMB | -sd- |
| Rev No. | Remarks | Date | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | Prepared By | | Reviewed By | | Approved & Issued By | |

| Rev No. | Description | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| | | 28/02/25 | 28/02/25 | 28/02/25 |

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| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V Extensible Sub Feeder Pillar complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the purchaser (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract. All SUBVENDOR/SUBCONTRACTOR list shall also be subject to approval by the PURCHASER (TPC) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------|---------|-------------------------------------------------------|------|------------------------------------------|--------|----------------------|------------|------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------|---------|-------------------------------|---------|---------------------------------------------------------------------------------------|---------|----------------------|---------|---------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------|
| 2.0 | APPLICABLE STANDARDS | <p>The equipment (and the materials used) covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, IEC / International standards , with latest amendment from time to time, thereof, some of which are listed below:</p> <p>The Sub Feeder Pillar shall comply with the requirements stated in the latest editions of the following recommendations, standard and specifications:</p> <table border="1" data-bbox="427 1048 1453 1836"> <thead> <tr> <th data-bbox="427 1048 762 1122">INDIAN STANDARDS (IS)</th> <th data-bbox="762 1048 1453 1122">Title</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 1122 762 1167">IS 5039</td> <td data-bbox="762 1122 1453 1167">Specification for distribution pillars below 1000V AC</td> </tr> <tr> <td data-bbox="427 1167 762 1211">IS 5</td> <td data-bbox="762 1167 1453 1211">Colour of ready mixed paints and enamels</td> </tr> <tr> <td data-bbox="427 1211 762 1256">IS 191</td> <td data-bbox="762 1211 1453 1256">Copper Specification</td> </tr> <tr> <td data-bbox="427 1256 762 1391">IS 13703-2</td> <td data-bbox="762 1256 1453 1391">Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons</td> </tr> <tr> <td data-bbox="427 1391 762 1480">IS 5082</td> <td data-bbox="762 1391 1453 1480">Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications</td> </tr> <tr> <td data-bbox="427 1480 762 1525">IS 1359</td> <td data-bbox="762 1480 1453 1525">Electroplated Coatings of Tin</td> </tr> <tr> <td data-bbox="427 1525 762 1615">IS 1730</td> <td data-bbox="762 1525 1453 1615">Dimensions for steel plates, sheets strips and flats for general engineering purposes</td> </tr> <tr> <td data-bbox="427 1615 762 1659">IS 2551</td> <td data-bbox="762 1615 1453 1659">Danger Notice plates</td> </tr> <tr> <td data-bbox="427 1659 762 1749">IS 4759</td> <td data-bbox="762 1659 1453 1749">Hot-dip Zinc coatings on structural steel and other allied products</td> </tr> <tr> <td data-bbox="427 1749 762 1836">IS 14772</td> <td data-bbox="762 1749 1453 1836">General requirements for enclosures for accessories for household and similar fixed electrical installations</td> </tr> </tbody> </table> | INDIAN STANDARDS (IS) | Title | IS 5039 | Specification for distribution pillars below 1000V AC | IS 5 | Colour of ready mixed paints and enamels | IS 191 | Copper Specification | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons | IS 5082 | Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications | IS 1359 | Electroplated Coatings of Tin | IS 1730 | Dimensions for steel plates, sheets strips and flats for general engineering purposes | IS 2551 | Danger Notice plates | IS 4759 | Hot-dip Zinc coatings on structural steel and other allied products | IS 14772 | General requirements for enclosures for accessories for household and similar fixed electrical installations |
| INDIAN STANDARDS (IS) | Title | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5039 | Specification for distribution pillars below 1000V AC | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5 | Colour of ready mixed paints and enamels | | | | | | | | | | | | | | | | | | | | | | | |
| IS 191 | Copper Specification | | | | | | | | | | | | | | | | | | | | | | | |
| IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5082 | Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications | | | | | | | | | | | | | | | | | | | | | | | |
| IS 1359 | Electroplated Coatings of Tin | | | | | | | | | | | | | | | | | | | | | | | |
| IS 1730 | Dimensions for steel plates, sheets strips and flats for general engineering purposes | | | | | | | | | | | | | | | | | | | | | | | |
| IS 2551 | Danger Notice plates | | | | | | | | | | | | | | | | | | | | | | | |
| IS 4759 | Hot-dip Zinc coatings on structural steel and other allied products | | | | | | | | | | | | | | | | | | | | | | | |
| IS 14772 | General requirements for enclosures for accessories for household and similar fixed electrical installations | | | | | | | | | | | | | | | | | | | | | | | |

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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION OF 4 Way Extensible Compact Sub feeder Pillar Panel |
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| | | <table border="1"> <thead> <tr> <th data-bbox="427 248 767 282">IEC STANDARDS</th> <th data-bbox="767 248 1453 282">Title</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 282 767 344">IEC TR 61439-0</td> <td data-bbox="767 282 1453 344">Low-voltage switchgear and controlgear assemblies- Part 0: Guidance to specifying assemblies</td> </tr> <tr> <td data-bbox="427 344 767 439">IEC 60947-3</td> <td data-bbox="767 344 1453 439">Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units.</td> </tr> <tr> <td data-bbox="427 439 767 501">IEC 60947-1</td> <td data-bbox="767 439 1453 501">Low-voltage switchgear and controlgear - Part 1: General rules</td> </tr> <tr> <td data-bbox="427 501 767 564">IEC 61439-2</td> <td data-bbox="767 501 1453 564">Low-voltage switchgear and controlgear assemblies - Part 2: Power switchgear and controlgear assemblies</td> </tr> <tr> <td data-bbox="427 564 767 627">IEC 60664</td> <td data-bbox="767 564 1453 627">Insulation coordination for equipment within low-voltage systems - ALL PARTS</td> </tr> <tr> <td data-bbox="427 627 767 658">IEC 60269-1</td> <td data-bbox="767 627 1453 658">Low-Voltage Fuses Part 1 General Requirements</td> </tr> <tr> <td data-bbox="427 658 767 721">IEC 61439-2</td> <td data-bbox="767 658 1453 721">Low-voltage switchgear and controlgear assemblies Part 2: Power switchgear and controlgear assemblies</td> </tr> <tr> <td data-bbox="427 721 767 779">IEC 60529</td> <td data-bbox="767 721 1453 779">Degrees of protection provided by enclosures (IP Code)</td> </tr> </tbody> </table> <p data-bbox="427 815 1453 875">In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</p> | IEC STANDARDS | Title | IEC TR 61439-0 | Low-voltage switchgear and controlgear assemblies- Part 0: Guidance to specifying assemblies | IEC 60947-3 | Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units. | IEC 60947-1 | Low-voltage switchgear and controlgear - Part 1: General rules | IEC 61439-2 | Low-voltage switchgear and controlgear assemblies - Part 2: Power switchgear and controlgear assemblies | IEC 60664 | Insulation coordination for equipment within low-voltage systems - ALL PARTS | IEC 60269-1 | Low-Voltage Fuses Part 1 General Requirements | IEC 61439-2 | Low-voltage switchgear and controlgear assemblies Part 2: Power switchgear and controlgear assemblies | IEC 60529 | Degrees of protection provided by enclosures (IP Code) |
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| 3.0 | CLIMATIC CONDITIONS OF THE INSTALLATION | <table border="1"> <tbody> <tr> <td data-bbox="443 943 517 1003">1</td> <td data-bbox="517 943 986 1003">Maximum ambient temperature</td> <td data-bbox="986 943 1445 1003">43 deg.C</td> </tr> <tr> <td data-bbox="443 1003 517 1064">2</td> <td data-bbox="517 1003 986 1064">Max. Daily average ambient temp</td> <td data-bbox="986 1003 1445 1064">35 deg.C</td> </tr> <tr> <td data-bbox="443 1064 517 1124">3</td> <td data-bbox="517 1064 986 1124">Min Ambient Temperature</td> <td data-bbox="986 1064 1445 1124">07 deg.C</td> </tr> <tr> <td data-bbox="443 1124 517 1184">4</td> <td data-bbox="517 1124 986 1184">Maximum Relative Humidity</td> <td data-bbox="986 1124 1445 1184">100%</td> </tr> <tr> <td data-bbox="443 1184 517 1245">5</td> <td data-bbox="517 1184 986 1245">Minimum Relative Humidity</td> <td data-bbox="986 1184 1445 1245">40%</td> </tr> <tr> <td data-bbox="443 1245 517 1375">6</td> <td data-bbox="517 1245 986 1375">Average No. of thunderstorm per annum</td> <td data-bbox="986 1245 1445 1375">50</td> </tr> <tr> <td data-bbox="443 1375 517 1435">7</td> <td data-bbox="517 1375 986 1435">Average Annual Rainfall</td> <td data-bbox="986 1375 1445 1435">2380mm</td> </tr> <tr> <td data-bbox="443 1435 517 1496">8</td> <td data-bbox="517 1435 986 1496">Average No. of rainy days per annum</td> <td data-bbox="986 1435 1445 1496">115</td> </tr> <tr> <td data-bbox="443 1496 517 1556">9</td> <td data-bbox="517 1496 986 1556">Rainy months</td> <td data-bbox="986 1496 1445 1556">June to Oct.</td> </tr> <tr> <td data-bbox="443 1556 517 1617">10</td> <td data-bbox="517 1556 986 1617">Altitude above MSL not exceeding</td> <td data-bbox="986 1556 1445 1617">300 meters</td> </tr> <tr> <td data-bbox="443 1617 517 1677">11</td> <td data-bbox="517 1617 986 1677">Average Air Pressure</td> <td data-bbox="986 1617 1445 1677">29.6-inch Hg</td> </tr> </tbody> </table> <p data-bbox="421 1724 1477 1845">Atmosphere is generally laden with mild acid and dust suspended during summer months and subjected to fog in winter months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.</p> | 1 | Maximum ambient temperature | 43 deg.C | 2 | Max. Daily average ambient temp | 35 deg.C | 3 | Min Ambient Temperature | 07 deg.C | 4 | Maximum Relative Humidity | 100% | 5 | Minimum Relative Humidity | 40% | 6 | Average No. of thunderstorm per annum | 50 | 7 | Average Annual Rainfall | 2380mm | 8 | Average No. of rainy days per annum | 115 | 9 | Rainy months | June to Oct. | 10 | Altitude above MSL not exceeding | 300 meters | 11 | Average Air Pressure | 29.6-inch Hg |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Max. Daily average ambient temp | 35 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Min Ambient Temperature | 07 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Maximum Relative Humidity | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Minimum Relative Humidity | 40% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Average No. of thunderstorm per annum | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Average Annual Rainfall | 2380mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Average No. of rainy days per annum | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Rainy months | June to Oct. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Altitude above MSL not exceeding | 300 meters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Average Air Pressure | 29.6-inch Hg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| R01 | TECHNICAL SPECIFICATION OF 4 Way Extensible Compact Sub feeder Pillar Panel | Yash M. Mane  28/02/25 | Ajay V. Potdar  28/02/25 | Ravindra M. Bhanage  28/02/25 |

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|-----|-----------------------------------------------|-----------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.0 | GENERAL TECHNICAL REQUIREMENTS | Sr. No. | Item Description | Tata Power Requirement |
| | | 1 | Manufacturer | Name Manufacturer Address Contact telephone no |
| | | 2 | Basic design | A totally enclosed free standing floor mounted self-supporting metal sheet cubical containing bus-bars connected to distribution feeders protected Complied through HRC type fuse base. |
| | | 3 | Main bus bar rating | As per Specification |
| | | 4 | No of incoming feeders | Quantity- 2 nos |
| | | | Incomer Rating | Rating in Amp 630A |
| | | 4a | No of outgoing feeders | Quantity- 2 nos |
| | | | Outgoing Rating | Rating in Amp 315A |
| | | 5 | Panel construction | CRCA sheet steel |
| | | 6 | Panel enclosure class | IP54 - ingress protection (for outdoor installation) |
| | | 7 | Sheet thickness | As per Specification |
| | | 8 | Door type for front access | Single door for feeder pillar |
| | | 9 | Door hinges | Minimum three anti-theft type hinges self-locking type. |
| | | 10 | Padlocking facility | As per Specification |
| | | 11 | Master key for all doors | Identical for all panels, 1 no./ panel |
| | | 12 | External steel hardware | Galvanized nut & bolts 8.8 Grade |
| | | 13 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 |
| | | 14 | Current Density of Aluminum busbars | 1 A/sq mm |
| | | 15 | Bus bar colour coding for R, Y, B & neutral | Heat shrinkable sleeves with colour Red, Yellow, Blue & Black respectively |
| 16 | Bus bar size in mm for 630 A I/C | 1x80x10mm for Phase & 2x40x10mm Neutral | | |
| 17 | Bus bar size in mm for 315A O/G | 1x40x10mm for Phase | | |
| 18 | Earth bus size | 50x10 mm GI | | |
| 19 | Main bus bar short circuit withstand capacity | 50 kA for 1 sec | | |

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| | | 20 | Permissible maximum temperature rise above ambient of 40°C | Busbar: 45 deg C Terminals: 65 deg C |
| | | 21 | Bus bar support insulators | As per IS13410 DMC, 1100V grade |
| | | 22 | 4 Way Type | 2 nos per phase & neutral |
| | | 23 | Incoming Cable | 2X4C 300 Sq.mm |
| | | 24 | Outgoing Cable | 1X4C 300 Sq.mm |
| | | 25 | Fuse Base | 2 no. 400A, Per phase & 2 no. 630A, Per phase |
| | | 25a | Make | <i>Schneider/ L&T (L&K)/ Siemens/ GE Power Controls/ Jean Muller / Bussman.</i> |
| | | 25b | Fuses (630A, 315A) | HRC plug-in type |
| | | 26 | Gland plate at panel bottom | Cold rolled close annealed (CRCA) sheet steel 3 mm thick. It shall be possible to temporarily detach the base plate for installation and connection of cables. SS nuts and bolts. Grommet: Fire retardant EPDM rubber grommet shall be provided on holes for cable entry. |
| | | 27 | Cable termination clearance | 300mm minimum from gland plate |
| | | 28 | Earth studs on both side of panel bottom | With M10 galvanized steel nut bolts |
| | | 29 | Panel maximum dimensions in mm | Width X Depth X Height |
| | | | Sub Feeder Pillar (4 - Way) | 550 mm X 400 mm X 1650 mm |
| | | 30 | Clearance between live parts | Phase - phase: 25 mm |
| | | | | Phase - earth: 20 mm |
| | | 31 | Continuous rated operating voltage | 415 volt +/- 10% |
| | | 32 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute |
| | | 33 | Insulation resistance ph-ph & ph-earth | Minimum 100MOhm with 500V Megger. |
| | | 34 | Surface preparation for painting | Sand blasting or 7 tank process |
| | | 35 | Painting | Power coated grade A PU paint min thickness 120 micron |
| | | 36 | Shade | International Orange shade No 592 of IS-5 |
| | | 37 | Fluorescent strip | 2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of Yellow colour each of 75 mm width |

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| | | | | shall be provided on all sides. | |
| | | 38 | Panel drawing | To be submitted with GTP | |
| | | 39 | Lighting system | LED Based | |
| | | 40 | Power Supply Socket | 5A/15A Plug point socket to be provided | |
| | | 41 | Type Test certificate | Copy of Test Certificate to be submitted | |
| 5.0 | GENERAL CONSTRUCTION | Extensible Compact Sub feeder Pillar - TPN Bus bar with 2 fuses (for incomer) & 2 fuses (for outgoing). | | | |
| | | Sr. No. | Parameter | Requirement | |
| | | 1 | Basic Design | A totally enclosed free standing floor mounted self-supporting metal sheet cubical containing bus-bars connected to distribution feeders. | |
| | | 2 | Number of Ways | The maximum number of circuits for which the shall be designed: Extensible Sub feeder Pillar with Fuses: 4 Way | |
| | | 4 | Incoming Feeder | 3 phase connected to bus through fuse | |
| | | 5 | Outgoing Feeder | 3 phase connected to bus through fuse | |
| | | 6 | Neutral bus | At bottom of panel, with M10 Nut- Bolts for terminating incoming & outgoing Pillar cable neutral circuit. | |
| | | 7 | Earth Bus | Earth strip of 50X10mm GI | |
| | | A. Enclosure: | | | |
| | | Sr. No. | Parameter | Requirement | |
| | | 1 | Application | Outdoor type | |
| | | 2 | Material | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | |
| | | 3 | Thickness of enclosure | 3 mm. Able to withstand rough weather conditions. | |
| | | 4 | Finishing of enclosure | Pre-treated & powder coating minimum 120 microns at any point of measurement | |
| | | 5 | Design | Compact and enclosure shall be designed to facilitate easy maintenance at a minimum height of 270 mm above FFL | |
| 6 | Design at top | Sloping canopy at top so that rain water does not accumulate. | | | |
| | | Minimum 10 degree slanting slope and extended 10 mm outside | | | |
| | | Lifting lug- 2 nos. lug welded on top. Eyebolt of suitable sizes shall be provided for lifting arrangements. | | | |
| 7 | Degree of Protection | IP54 suitable for outdoor installation | | | |
| | | Mild Steel 3 mm thick | | | |
| | | Removable detachable base plate. It shall be possible to temporarily detach the | | | |

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| | | 8 | Gland plate at panel bottom | base plate for installation and connection of cables. SS nuts and bolts. Grommet. Fire retardant EDPM rubber grommet shall be provided on holes for cable entry. | | | | | | | | |
| | | 9 | Fluorescent strip / painting on panel | 2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides. Paint shall have good colour retention, UV and weather resistant "STICK NO BILLS" to be painted on both sides of the Compact Sub Feeder Pillar with Black Colour on Yellow Background. | | | | | | | | |
| | | 10 | Dimensions (max) | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Width</th> <th>Depth</th> <th>Height</th> </tr> </thead> <tbody> <tr> <td>550</td> <td>400</td> <td>1650</td> </tr> </tbody> </table> | | | Width | Depth | Height | 550 | 400 | 1650 |
| | | Width | Depth | Height | | | | | | | | |
| | | 550 | 400 | 1650 | | | | | | | | |
| | | 11 | Louvers | The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on side's portion. The louvers shall have fine wire mesh. Vermin Proof should be done with gaskets. | | | | | | | | |
| | | 12 | Paint shade | International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint. | | | | | | | | |
| | | 13 | Surface preparation for painting | Sand blasting or 7 tank process followed by powder coating | | | | | | | | |
| | | 14 | Foundation Bolts | Required Number of Foundation Bolts to be supplied with the panel. | | | | | | | | |
| | | 15 | External hardware | Galvanized steel nut & bolts, Yellow zinc plated with grade 8.8 for Electrical contacts. Other hardware of grade 4.6 | | | | | | | | |
| | | 16 | Clearance | Minimum Phase to phase clearance of 25mm and Phase to Neutral / Earth clearance of 20mm shall be provided in the panel. | | | | | | | | |
| | | 17 | Bolted Covers | Panel Should have internally bolted, removable side covers. All side covers shall be covered with min 1.5 mm thick bolted SMC/FRP sheets. | | | | | | | | |
| | | 18 | Insulation sheets | All enclosure shall be covered with bolted min 1.5 mm thick SMC/FRP sheets from inside. | | | | | | | | |

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| | | <p>B. Doors:</p> <table border="1"> <thead> <tr> <th data-bbox="424 309 576 342">Sr. No.</th> <th data-bbox="576 309 882 342">Parameter</th> <th data-bbox="882 309 1469 342">Requirement</th> </tr> </thead> <tbody> <tr> <td data-bbox="424 342 576 405">1</td> <td data-bbox="576 342 882 405">Material of door</td> <td data-bbox="882 342 1469 405">Cold Rolled Close Annealed (CRCA) sheet steel - powder coated.</td> </tr> <tr> <td data-bbox="424 405 576 443">2</td> <td data-bbox="576 405 882 443">Thickness</td> <td data-bbox="882 405 1469 443">Thickness - 2 mm</td> </tr> <tr> <td data-bbox="424 443 576 875">3</td> <td data-bbox="576 443 882 875">Type of Door arrangement</td> <td data-bbox="882 443 1469 875"> <p>Door with insulating rubber grip handle.</p> <p>The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions.</p> <p>For Extensible Compact Sub Feeder Pillar single door on front and back.</p> <p>All doors shall be covered with min 1.5 mm thick bolted SMC/FRP sheets.</p> </td> </tr> <tr> <td data-bbox="424 875 576 1182">4</td> <td data-bbox="576 875 882 1182">Hinges</td> <td data-bbox="882 875 1469 1182"> <p>Minimum 3 Nos. anti-theft hinges for each door.</p> <p>Hinges shall not be visible from outside and should not be removable.</p> <p>Material of hinges and screws: Heavy duty stainless steel (SS)</p> <p>Hinges shall be of such construction that the doors can be swung open by not less than 120 deg.</p> </td> </tr> <tr> <td data-bbox="424 1182 576 1249">5</td> <td data-bbox="576 1182 882 1249">Engraving</td> <td data-bbox="882 1182 1469 1249">SLD shall be engraved & pasted on inside of door</td> </tr> <tr> <td data-bbox="424 1249 576 1357">6</td> <td data-bbox="576 1249 882 1357">Gasket</td> <td data-bbox="882 1249 1469 1357">The panel shall be provided with gasket all round the perimeter of covers, gland plates, removable covers and doors</td> </tr> <tr> <td data-bbox="424 1357 576 1395">7</td> <td data-bbox="576 1357 882 1395">Door handles</td> <td data-bbox="882 1357 1469 1395">On front</td> </tr> <tr> <td data-bbox="424 1395 576 1749">8</td> <td data-bbox="576 1395 882 1749">Paint shade</td> <td data-bbox="882 1395 1469 1749"> <p>International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint.</p> <p>2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides.</p> </td> </tr> <tr> <td data-bbox="424 1749 576 1816">9</td> <td data-bbox="576 1749 882 1816">Surface preparation for painting</td> <td data-bbox="882 1749 1469 1816">Sand blasting or 7 tank process followed by powder coating</td> </tr> </tbody> </table> | Sr. No. | Parameter | Requirement | 1 | Material of door | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | 2 | Thickness | Thickness - 2 mm | 3 | Type of Door arrangement | <p>Door with insulating rubber grip handle.</p> <p>The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions.</p> <p>For Extensible Compact Sub Feeder Pillar single door on front and back.</p> <p>All doors shall be covered with min 1.5 mm thick bolted SMC/FRP sheets.</p> | 4 | Hinges | <p>Minimum 3 Nos. anti-theft hinges for each door.</p> <p>Hinges shall not be visible from outside and should not be removable.</p> <p>Material of hinges and screws: Heavy duty stainless steel (SS)</p> <p>Hinges shall be of such construction that the doors can be swung open by not less than 120 deg.</p> | 5 | Engraving | SLD shall be engraved & pasted on inside of door | 6 | Gasket | The panel shall be provided with gasket all round the perimeter of covers, gland plates, removable covers and doors | 7 | Door handles | On front | 8 | Paint shade | <p>International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint.</p> <p>2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides.</p> | 9 | Surface preparation for painting | Sand blasting or 7 tank process followed by powder coating |
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| 1 | Material of door | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Thickness | Thickness - 2 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Type of Door arrangement | <p>Door with insulating rubber grip handle.</p> <p>The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions.</p> <p>For Extensible Compact Sub Feeder Pillar single door on front and back.</p> <p>All doors shall be covered with min 1.5 mm thick bolted SMC/FRP sheets.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Hinges | <p>Minimum 3 Nos. anti-theft hinges for each door.</p> <p>Hinges shall not be visible from outside and should not be removable.</p> <p>Material of hinges and screws: Heavy duty stainless steel (SS)</p> <p>Hinges shall be of such construction that the doors can be swung open by not less than 120 deg.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Engraving | SLD shall be engraved & pasted on inside of door | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Gasket | The panel shall be provided with gasket all round the perimeter of covers, gland plates, removable covers and doors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Door handles | On front | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Paint shade | <p>International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint.</p> <p>2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Surface preparation for painting | Sand blasting or 7 tank process followed by powder coating | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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C. Lock:

| Sr. No. | Parameter | Requirement |
|---------|-------------------------------|---------------------------------------------------------------------------------|
| 1 | Arrangement | 2 types of lock arrangement: a) Padlock b) Sliding Bolt latch |
| 2 | Material of locking mechanism | a) For Padlock: Same as that of enclosure b) Sliding Bolt latch of Aluminium |

D. Cable Connection:

| Sr. No. | Parameter | Requirement |
|---------|-----------------------------------------------|----------------------------------------------------------------|
| 1 | Cable entry direction | Cable entry shall be from bottom of Compact Sub Feeder Pillar. |
| 2 | Cable termination clearance from gland plate. | 300 mm minimum |
| 3 | Cable termination | All cable terminations shall be from the front side |

E. Bus- bars:

Busbars shall be of electrolytic grade aluminium with Bakelite shrouding, rated for 800 A, 50 kA for 1 sec and shall have adequate cross section to carry the continuous rated current and short time current. Main Busbar should be continuous/ without any joint. All bus bars, bus taps and joints shall be PVC taped. Neutral bus bar shall be provided on rear side & rated for full bus bar rating.

| Sr. No. | Parameter | Requirement |
|---------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Material grade | Phase & Neutral bus-bars as per IS 5082 - Aluminium grade 19501 (H2). |
| 2 | Bus-bar colour coding for R, Y, B & Neutral | Heat shrinkable insulation sleeves (1.1 kV voltage grade and min. Class A insulation class) of colour Red, Yellow, Blue and Black respectively. |
| 3 | Bus-bar size (in mm) | 80x10mm for Phase & Neutral (Al) |
| 4 | Bus-bar configuration | Single bus-bars (per phase and neutral) shall be provided. |
| 5 | Bus-bar arrangement | Horizontally placed, with R phase bus at top. |
| 6 | Bus-bar phase barriers/ Phase separators | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. |
| 7 | Bus-bar support | 2 nos per phase and neutral |

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|---|-------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| | insulators | | |
| 8 | Cable size | Incoming 4C x 300 sq.mm. | Outgoing 4C x 300 sq.mm. |
| 9 | Bus Bar Connecting Link | Aluminum Bus Bar Connecting Link of same size as Bus Bar to be provided. (800 sq.mm. or equivalent) for each phase & neutral. | |

F. Panel Configuration:

| Sr. No. | Parameter | Requirement |
|---------|------------------------------|---------------------------------------------------------------------------------------------|
| 1 | No. of Incoming | 2 |
| 2 | No. of outgoing | 2 |
| 3 | Nuts and bolts in fuse links | Hot dip galvanized nut, bolts of size M10 & two plain washers along with one spring washer. |

G. Earthing:

| Sr. No. | Parameter | Requirement |
|---------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Earth studs | On both sides of panel bottom. Shall be provide with M10 galvanized steel nut bolts washers. The earthing studs shall be welded from inside the enclosure. |
| 2 | Earth bus-bar | To be provided at panel bottom. 50 x 10 mm GI. The earth bus-bar shall be internally connected to two separate earth terminals located outside (on both sides of enclosure to be protruded 50 mm outside). The earth bus-bar shall be located at sufficient height from the gland plate. |
| 3 | Flexible earth connection to doors | Flexible PVC Copper wire 1.5 sq.mm. with green colour insulation on all doors. |
| 4 | Body Earthing | All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of green coloured braided copper conductors of adequate size |
| 5 | Earth Bus Connecting Links | Bus Bar Connecting Link of same size as Bus Bar to be provided. (50 x 10 sq.mm.) |

H. Fuse and Fuse base:

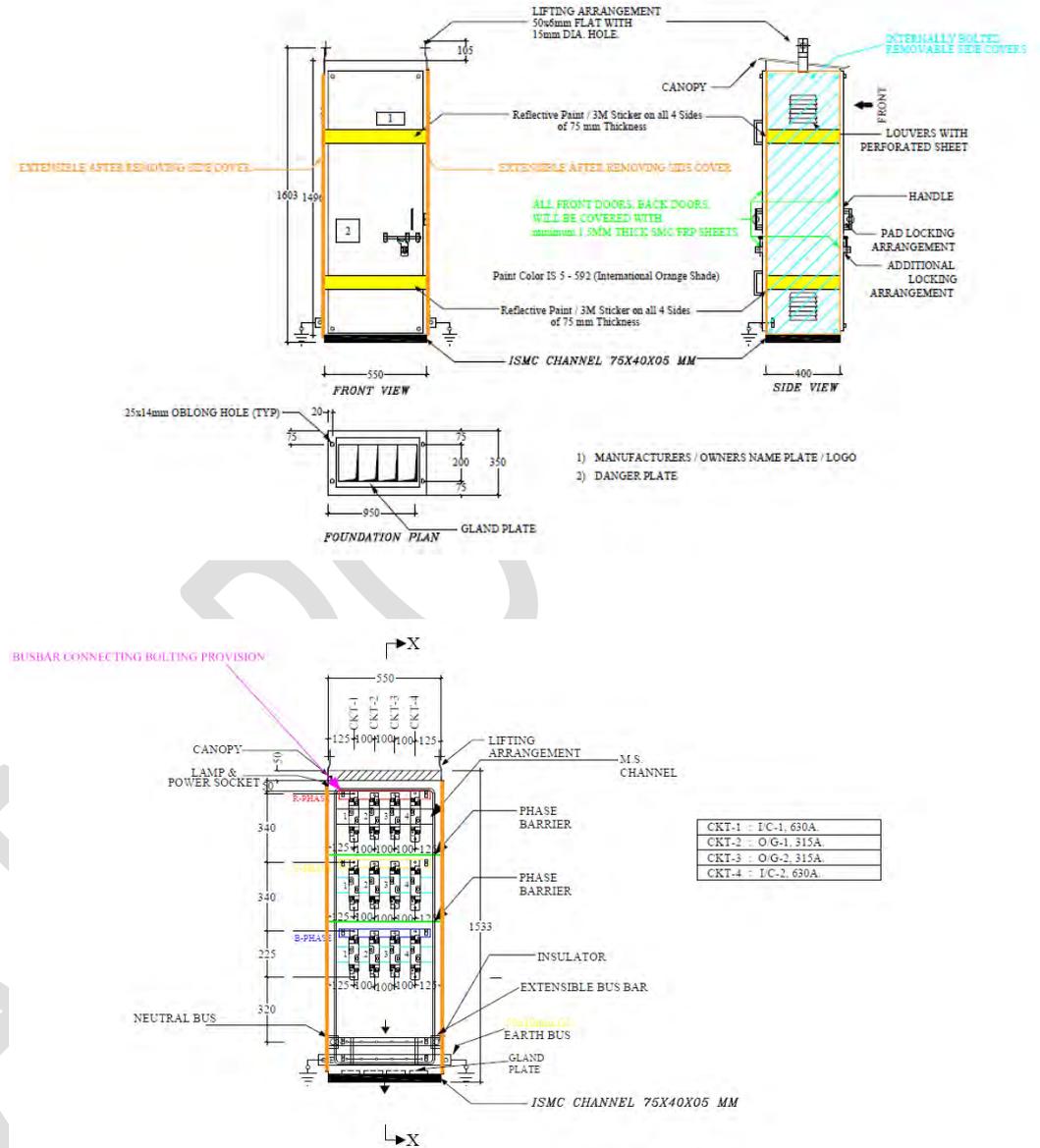
| Sr. No. | Parameter | Requirement |
|---------|------------------|------------------------------------------------------------------------------------------|
| 1 | Type of HRC fuse | Knife type DIN HRC fuse with fuse links as per IEC 60269-1, with tinned copper contacts. |
| 2 | Fuse puller | 1 no. fuse puller to be provided against 30 nos feeder pillar. |

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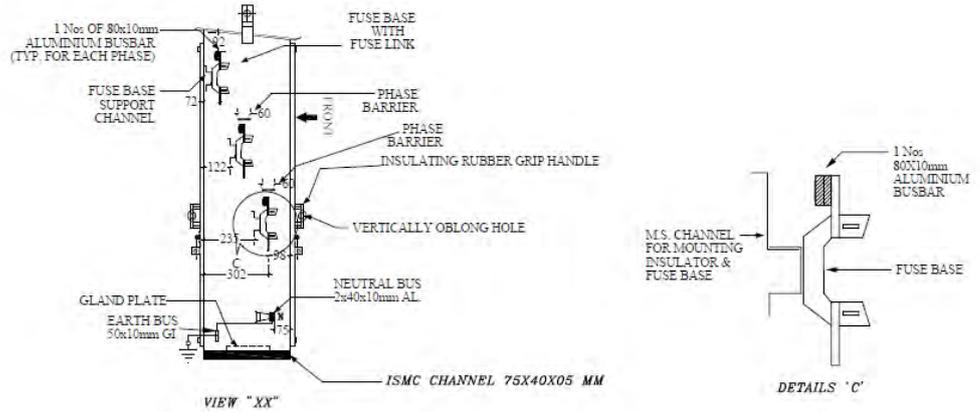
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| | | | | It shall be possible to replace the fuses on live system without compromising on safety. | | | | | | | | | | | | | |
| | | 3 | Fuse base current carrying part | Tin plated copper (with spring) as IS 191 | | | | | | | | | | | | | |
| | | 4 | Fuse base material | DMC | | | | | | | | | | | | | |
| | | 5 | Fuse fixing with bus-bars | Bolted type connection | | | | | | | | | | | | | |
| | | 6 | Fuse links | Incoming: 630 A Type 3 Outgoing: 315 A Type 2 | | | | | | | | | | | | | |
| | | 7 | Fuse Base | Fuse base shall have adequate contact surface with the busbars provided to ensure that no local heating takes place. Incoming 2 nos, 630A Outgoing 2 Nos, 400 A | | | | | | | | | | | | | |
| | | 8 | Fuse Outlet Clearances | Clearance of minimum 100mm between each fuse outlet and 125mm between fuse outlet and body of panel to be maintained. | | | | | | | | | | | | | |
| | | I. Pillar Lighting: | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Parameter</th> <th>Requirement</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Light bulb with holder</td> <td>240 V LED bulb along with lamp holder, controlled through 2 Amp SP MCB.</td> </tr> <tr> <td>2</td> <td>Power Socket</td> <td>240 V Single Phase 5/15 Amp five pin socket controlled through 15 Amp SP MCB</td> </tr> </tbody> </table> | | | | | | Sr. No. | Parameter | Requirement | 1 | Light bulb with holder | 240 V LED bulb along with lamp holder, controlled through 2 Amp SP MCB. | 2 | Power Socket | 240 V Single Phase 5/15 Amp five pin socket controlled through 15 Amp SP MCB | |
| | | Sr. No. | Parameter | Requirement | | | | | | | | | | | | | |
| 1 | Light bulb with holder | 240 V LED bulb along with lamp holder, controlled through 2 Amp SP MCB. | | | | | | | | | | | | | | | |
| 2 | Power Socket | 240 V Single Phase 5/15 Amp five pin socket controlled through 15 Amp SP MCB | | | | | | | | | | | | | | | |
| J. Danger Board / Branding: | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Parameter</th> <th>Requirement</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Danger Board</td> <td>Danger boards shall be provided in local language also on the on front & rear cover with white background and with red letters.</td> </tr> <tr> <td>2</td> <td>Danger Marking</td> <td>Front and rear side danger marking with skull and bones with mention of voltage level of 440V AC as per IS 2551.</td> </tr> <tr> <td>3</td> <td>Branding Plate</td> <td>Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches as per Annexure 1 on both sides of the panel (Front and Rear)</td> </tr> </tbody> </table> | | | | | | Sr. No. | Parameter | Requirement | 1 | Danger Board | Danger boards shall be provided in local language also on the on front & rear cover with white background and with red letters. | 2 | Danger Marking | Front and rear side danger marking with skull and bones with mention of voltage level of 440V AC as per IS 2551. | 3 | Branding Plate | Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches as per Annexure 1 on both sides of the panel (Front and Rear) |
| Sr. No. | Parameter | Requirement | | | | | | | | | | | | | | | |
| 1 | Danger Board | Danger boards shall be provided in local language also on the on front & rear cover with white background and with red letters. | | | | | | | | | | | | | | | |
| 2 | Danger Marking | Front and rear side danger marking with skull and bones with mention of voltage level of 440V AC as per IS 2551. | | | | | | | | | | | | | | | |
| 3 | Branding Plate | Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches as per Annexure 1 on both sides of the panel (Front and Rear) | | | | | | | | | | | | | | | |

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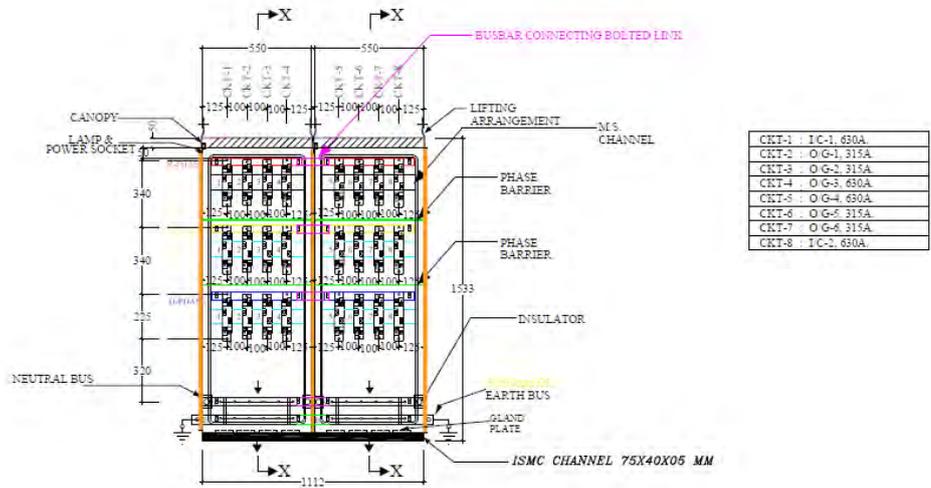
Reference GA DRAWING:



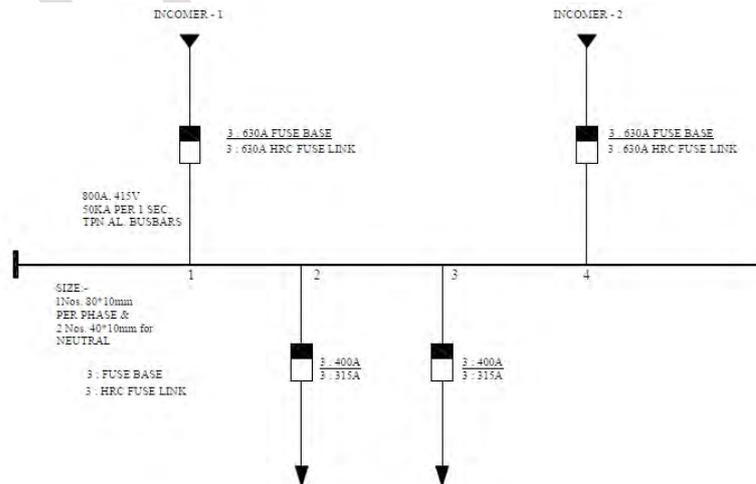
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Extensible Design:



SLD:



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| 6.0 | NAME PLATE & MARKINGS | 6.1 Name plate- On front door top left side-showing 1) Purchaser name & PO number. 2) Manufacturer name 3) Month / year of manufacturing 4) 'Property of Tata Power' 6.2 Marking for panel earth stud- Black letter 'E', on riveted Al label 6.3 Danger board in English & local language, riveted on doors- White colour background with red lettering on 1.6mm thick Al plate. 6.4 Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown in Annexure-1. | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7.0 | TESTS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.1 | TYPE TEST | Type test - Only type tested components – Insulators & aluminium bus bar shall be accepted. For Enclosure & busbar <table border="1" data-bbox="422 862 1452 1220"> <thead> <tr> <th>Sr. No.</th> <th>Test</th> <th>Clause No.</th> <th>Reference Standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Verification of temperature-rise limits</td> <td>Clause No 8.2</td> <td>IS 5039</td> </tr> <tr> <td>2</td> <td>Verification of dielectric properties</td> <td>Clause No 8.3</td> <td>IS 5039</td> </tr> <tr> <td>3</td> <td>Verification of short-circuits strength</td> <td>Clause No 8.4</td> <td>IS 5039</td> </tr> <tr> <td>4</td> <td>Verification of clearance and creepage distances</td> <td>Clause No 8.5</td> <td>IS 5039</td> </tr> <tr> <td>5</td> <td>Verification of degree of protection</td> <td>Clause No 8.6</td> <td>IS 5039</td> </tr> </tbody> </table> | Sr. No. | Test | Clause No. | Reference Standard | 1 | Verification of temperature-rise limits | Clause No 8.2 | IS 5039 | 2 | Verification of dielectric properties | Clause No 8.3 | IS 5039 | 3 | Verification of short-circuits strength | Clause No 8.4 | IS 5039 | 4 | Verification of clearance and creepage distances | Clause No 8.5 | IS 5039 | 5 | Verification of degree of protection | Clause No 8.6 | IS 5039 |
| Sr. No. | Test | Clause No. | Reference Standard | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Verification of temperature-rise limits | Clause No 8.2 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Verification of dielectric properties | Clause No 8.3 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Verification of short-circuits strength | Clause No 8.4 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Verification of clearance and creepage distances | Clause No 8.5 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Verification of degree of protection | Clause No 8.6 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 7.2 | ROUTINE TEST | 1) Visual inspection & dimensional check 2) Insulation resistance test 3) HV test | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.3 | ACCEPTANCE TEST | 1) Visual inspection & dimensional check 2) Verification of clearance and creepage distance 3) Paint thickness check 4) Wiring checks 5) Insulation resistance test 6) HV test | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | TYPE TEST CERTIFICATES | Bidder shall furnish the type test report of 'Feeder Pillar and Service Pillar' for the tests as mentioned in Clause no.7 of this specification as per reference standards. Complete set of Type Tests shall be conducted at CPRI/ERDA/NABL accredited laboratory. Type test should have been conducted in certified test laboratories during the period not exceeding 10 years from the date of opening the bid. any test report not acceptable or | | | | | | | | | | | | | | | | | | | | | | | | |

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| | | <p>any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER COMPANY.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> <p>Bids without all type test report shall stand disqualified.</p> | | | |
| 9.0 | PRE-DESPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY `s representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY. Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> Test reports MDCC issued by TATA POWER COMPANY Invoice in duplicate Packing list Drawings & catalogue Guarantee / Warrantee card Delivery Challan Other Documents (as applicable). | | | |
| 10. | INSPECTION AFTER RECEIPT AT STORES | <p>The material received at TATA POWER Store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to TATA POWER COMPANY.</p> <p>If any deviation or anomaly observed at this stage same need to be rectified by bidder at bidders own cost at earliest.</p> | | | |

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| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> | | | |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.</p> <p>No single use plastic to be used in packing material. Packing should be done with environment friendly recyclable materials.</p> | | | |
| 13.0 | TENDER SAMPLE | Not applicable. | | | |
| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> <p>TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections.</p> | | | |
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards | | | |

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| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit GTP & Drawing with 15 days from placement of order/OLA for approval. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). | | | |
| 17.0 | SPARES, ACCESSORIES AND TOOLS | Keys of door | | | |
| 18.0 | DRAWINGS AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid. All the documents & drawings shall be in English language</p> <p>a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates</p> | | | |
| 19.0 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS: | Clause wise compliance of this specification is to be submitted with bid documents. | | | |

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(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

| S.No. | Clause No. | Details of deviation with justifications |
|-------|------------|------------------------------------------|
| | | |

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Designation

Signature

| Rev No. | Description | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| R01 | TECHNICAL SPECIFICATION OF 4 Way Extensible Compact Sub feeder Pillar Panel | Yash M. Mane  28/02/25 | Ajay V. Potdar  28/02/25 | Ravindra M. Bhanage  28/02/25 |

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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION OF 4 Way Extensible Compact Sub feeder Pillar Panel |
| ENSE-DS-2025-R01 | | Date of Issue: 28/02/2025 |

Annexure – I

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Tata Power Logo Colour



Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.



Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)



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Annexure 2: Inspection Testing Plan

- 1) Visual inspection & dimensional check
- 2) Verification of clearance and creepage distance
- 3) Paint thickness check
- 4) Wiring checks
- 5) Insulation resistance test
- 6) HV test

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TECHNICAL SPECIFICATION

Mini Pillar with Fuses - 415 V, 400A

*The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra*

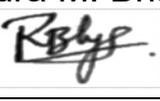
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TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2020-R01

Document Title: Technical Specification of Mini Pillar with Fuses- 415V, 400A

| R01 | ENSE-DS-2020-R01 For tendering Purpose | 28/02/25 | YMM |  | AVP |  | RMB |  |
|---------|--------------------------------------------|------------|-------------|-----------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------|
| R00 | ENSE-DS-2020-R00 For tendering Purpose | 22/12/2023 | YMM | -sd- | AVP | -sd- | RMB | -sd- |
| R0 | SPEC NET Mini Pillar with Fuse-01 | 20/06/2017 | ND | -sd- | SK | -sd- | CC | -sd- |
| Rev No. | Remarks | Date | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | Prepared By | | Reviewed By | | Approved & Issued By | |

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 - 2.0 APPLICABLE STANDARDS
 - 3.0 CLIMATIC CONDITIONS OF THE INSTALLATION
 - 4.0 GENERAL TECHNICAL REQUIREMENTS
 - 5.0 GENERAL CONSTRUCTIONS
 - 6.0 NAME PLATE & MARKINGS
 - 7.0 TESTS
 - 8.0 TYPE TEST CERIFICATES
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 - 10.0 INSPECTION AFTER RECEIPT AT STORE
 - 11.0 GUARANTEE
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 - 17.0 SPARES, ACCESSORIES AND TOOLS
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 - 19.0 SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS
 - 20.0 SCHEDULE "B" DEVIATIONS
- + ANNEXURE 1 & 2

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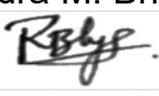
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| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V Mini Pillar with fuses complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Ltd. at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the Purchaser (Tata Power Company) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the Purchaser (Tata Power Company) after award of contract. All Sub vendor/Subcontractor list shall also be subject to approval by the Purchaser (Tata Power Company) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------|---------|-------------------------------------------------------|------|------------------------------------------|--------|----------------------|------------|------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------|---------|-------------------------------|---------|---------------------------------------------------------------------------------------|---------|----------------------|---------|---------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------|
| 2.0 | APPLICABLE STANDARDS | <p>The equipment (and the materials used) covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, IEC / International standards , with latest amendment from time to time, thereof, some of which are listed below:</p> <p>The Sub Feeder Pillar shall comply with the requirements stated in the latest editions of the following recommendations, standard and specifications:</p> <table border="1" data-bbox="424 1034 1449 1827"> <thead> <tr> <th data-bbox="424 1034 759 1106">INDIAN STANDARDS (IS)</th> <th data-bbox="759 1034 1449 1106">Title</th> </tr> </thead> <tbody> <tr> <td data-bbox="424 1106 759 1151">IS 5039</td> <td data-bbox="759 1106 1449 1151">Specification for distribution pillars below 1000V AC</td> </tr> <tr> <td data-bbox="424 1151 759 1211">IS 5</td> <td data-bbox="759 1151 1449 1211">Colour of ready mixed paints and enamels</td> </tr> <tr> <td data-bbox="424 1211 759 1272">IS 191</td> <td data-bbox="759 1211 1449 1272">Copper Specification</td> </tr> <tr> <td data-bbox="424 1272 759 1384">IS 13703-2</td> <td data-bbox="759 1272 1449 1384">Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons</td> </tr> <tr> <td data-bbox="424 1384 759 1489">IS 5082</td> <td data-bbox="759 1384 1449 1489">Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications</td> </tr> <tr> <td data-bbox="424 1489 759 1550">IS 1359</td> <td data-bbox="759 1489 1449 1550">Electroplated Coatings of Tin</td> </tr> <tr> <td data-bbox="424 1550 759 1621">IS 1730</td> <td data-bbox="759 1550 1449 1621">Dimensions for steel plates, sheets strips and flats for general engineering purposes</td> </tr> <tr> <td data-bbox="424 1621 759 1682">IS 2551</td> <td data-bbox="759 1621 1449 1682">Danger Notice plates</td> </tr> <tr> <td data-bbox="424 1682 759 1753">IS 4759</td> <td data-bbox="759 1682 1449 1753">Hot-dip Zinc coatings on structural steel and other allied products</td> </tr> <tr> <td data-bbox="424 1753 759 1827">IS 14772</td> <td data-bbox="759 1753 1449 1827">General requirements for enclosures for accessories for household and similar fixed electrical installations</td> </tr> </tbody> </table> | INDIAN STANDARDS (IS) | Title | IS 5039 | Specification for distribution pillars below 1000V AC | IS 5 | Colour of ready mixed paints and enamels | IS 191 | Copper Specification | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons | IS 5082 | Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications | IS 1359 | Electroplated Coatings of Tin | IS 1730 | Dimensions for steel plates, sheets strips and flats for general engineering purposes | IS 2551 | Danger Notice plates | IS 4759 | Hot-dip Zinc coatings on structural steel and other allied products | IS 14772 | General requirements for enclosures for accessories for household and similar fixed electrical installations |
| INDIAN STANDARDS (IS) | Title | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5039 | Specification for distribution pillars below 1000V AC | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5 | Colour of ready mixed paints and enamels | | | | | | | | | | | | | | | | | | | | | | | |
| IS 191 | Copper Specification | | | | | | | | | | | | | | | | | | | | | | | |
| IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 - Fuses for use by authorized persons | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5082 | Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications | | | | | | | | | | | | | | | | | | | | | | | |
| IS 1359 | Electroplated Coatings of Tin | | | | | | | | | | | | | | | | | | | | | | | |
| IS 1730 | Dimensions for steel plates, sheets strips and flats for general engineering purposes | | | | | | | | | | | | | | | | | | | | | | | |
| IS 2551 | Danger Notice plates | | | | | | | | | | | | | | | | | | | | | | | |
| IS 4759 | Hot-dip Zinc coatings on structural steel and other allied products | | | | | | | | | | | | | | | | | | | | | | | |
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| IEC STANDARDS | Title | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| IEC 61439-1 | Low-voltage switchgear and controlgear assemblies Part 1: General rules | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC 60947-3 | Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC 60947-1 | Low-voltage switchgear and controlgear - Part 1: General rules | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC 60664 | Insulation coordination for equipment within low-voltage systems - ALL PARTS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC 60269-1 | Low-Voltage Fuses Part 1 General Requirements | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| IEC 60529 | Degrees of protection provided by enclosures (IP Code) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | CLIMATIC CONDITIONS OF THE INSTALLATION | <table border="1" data-bbox="443 925 1441 1675"> <tbody> <tr><td>1</td><td>Maximum ambient temperature</td><td>43 deg.C</td></tr> <tr><td>2</td><td>Max. Daily average ambient temp</td><td>35 deg.C</td></tr> <tr><td>3</td><td>Min Ambient Temperature</td><td>07 deg.C</td></tr> <tr><td>4</td><td>Maximum Relative Humidity</td><td>100%</td></tr> <tr><td>5</td><td>Minimum Relative Humidity</td><td>40%</td></tr> <tr><td>6</td><td>Average No. of thunderstorm per annum</td><td>50</td></tr> <tr><td>7</td><td>Average Annual Rainfall</td><td>2380mm</td></tr> <tr><td>8</td><td>Average No. of rainy days per annum</td><td>115</td></tr> <tr><td>9</td><td>Rainy months</td><td>June to Oct.</td></tr> <tr><td>10</td><td>Altitude above MSL not exceeding</td><td>300 meters</td></tr> <tr><td>11</td><td>Average Air Pressure</td><td>29.6-inch Hg</td></tr> </tbody> </table> <p data-bbox="419 1706 1484 1798">Atmosphere is generally laden with mild acid and dust suspended during summer months and subjected to fog in winter months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.</p> | 1 | Maximum ambient temperature | 43 deg.C | 2 | Max. Daily average ambient temp | 35 deg.C | 3 | Min Ambient Temperature | 07 deg.C | 4 | Maximum Relative Humidity | 100% | 5 | Minimum Relative Humidity | 40% | 6 | Average No. of thunderstorm per annum | 50 | 7 | Average Annual Rainfall | 2380mm | 8 | Average No. of rainy days per annum | 115 | 9 | Rainy months | June to Oct. | 10 | Altitude above MSL not exceeding | 300 meters | 11 | Average Air Pressure | 29.6-inch Hg |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Max. Daily average ambient temp | 35 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Min Ambient Temperature | 07 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Maximum Relative Humidity | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Minimum Relative Humidity | 40% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Average No. of thunderstorm per annum | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Average Annual Rainfall | 2380mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Average No. of rainy days per annum | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Rainy months | June to Oct. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Altitude above MSL not exceeding | 300 meters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Average Air Pressure | 29.6-inch Hg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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4.0

GENERAL
TECHNICAL
REQUIREMENTS

| Sr. No. | Item Description | Tata Power Requirement |
|---------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------|
| 1 | Manufacturer | Name |
| | | Manufacturer Address |
| | | Contact telephone no |
| 2 | Main bus bar rating | 500A |
| 3 | No of incoming feeders | Quantity-1Nos |
| | | Rating in Amp- 315A |
| 4 | No of outgoing feeders | Quantity-04nos |
| | | Rating in Amp- 160A |
| 5 | Panel construction | CRCA sheet steel |
| 6 | Panel enclosure class | IP54 - ingress protection (for outdoor installation) |
| 7 | Sheet thickness | 3 mm minimum for covers & canopy, 2 mm for doors(As per IS 5039) |
| 8 | Door type for front & rear access | Single door for mini pillar |
| 9 | Door hinges | Three anti theft type hinges |
| 10 | Padlocking facility | As per Specification |
| 11 | Master key for all doors | Identical for all panels, |
| | | 1 no./ panel |
| 12 | External steel hardware | Galvanized nut & bolts, yellow zinc plated 8.8 Grade for Electrical Contacts. Other Hardware grade 4.6 |
| 13 | Phase & neutral Bus bar | Aluminum grade 19501 (H2) as per IS 5082 |
| 14 | Bus bar color coding for R,Y, B & neutral | Heat shrinkable sleeves with color Red, Yellow, Blue & Black respectively |
| 15 | Bus bar size in mm | 1x50x10mm for Phase & Neutral (Al) |
| 16 | Earth bus size | 50x6mm GI |
| 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec as per IEC 61439 |
| 18 | Main bus bar maximum temperature rise | Busbar: 45 deg C Terminals: 65 deg C |
| 19 | Bus bar support insulators | As per IS13410 DMC, 1100V grade |
| 20 | Incoming Cable provision | 4C 300 Sq.mm |
| 21 | Outgoing Cable provision | 4C 185 Sq.mm |

Rev
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Description

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TECHNICAL
SPECIFICATION
OF Mini Pillar
with Fuses 415
V, 400 A

Yash M. Mane



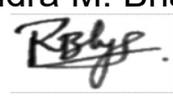
28/02/25

Ajay V. Potdar



28/02/25

Ravindra M. Bhanage



28/02/25

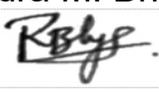
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| | | <table border="1"> <tr> <td data-bbox="408 206 549 259">22</td> <td data-bbox="549 206 922 259">Fuse Base</td> <td data-bbox="922 206 1516 259">4 no. 160A, Type 1 Per Phase (for Outgoing)</td> </tr> <tr> <td data-bbox="408 259 549 338">23</td> <td data-bbox="549 259 922 338">Make (Fuse Base & Fuse Links)</td> <td data-bbox="922 259 1516 338">Schneider/ L&T (L&K)/ Siemens/ GE Power Controls/ HPL/ Havells/ Jean Muller / Bussman.</td> </tr> <tr> <td data-bbox="408 338 549 392">24</td> <td data-bbox="549 338 922 392">Fuses (160A)</td> <td data-bbox="922 338 1516 392">HRC plug-in type</td> </tr> <tr> <td data-bbox="408 392 549 470">25</td> <td data-bbox="549 392 922 470">Gland plate at panel bottom</td> <td data-bbox="922 392 1516 470">MS, Black powder coated, 3mm thick for Multi core cable.</td> </tr> <tr> <td data-bbox="408 470 549 524">26</td> <td data-bbox="549 470 922 524">Cable termination clearance</td> <td data-bbox="922 470 1516 524">300mm minimum from gland plate</td> </tr> <tr> <td data-bbox="408 524 549 602">27</td> <td data-bbox="549 524 922 602">Earth studs on both side of panel bottom</td> <td data-bbox="922 524 1516 602">With M10 galvanized steel nut bolts</td> </tr> <tr> <td data-bbox="408 602 549 698">28</td> <td data-bbox="549 602 922 698">Panel maximum dimensions in mm Mini Pillar with Fuses in mm</td> <td data-bbox="922 602 1516 698">Width X Depth X Height 650 X 400 X 1600 (or less)</td> </tr> <tr> <td data-bbox="408 698 549 810">29</td> <td data-bbox="549 698 922 810">Clearance between live parts minimum 25mm(As per IS/IEC 60947 (Part 1))</td> <td data-bbox="922 698 1516 810">Phase - phase & Phase - earth</td> </tr> <tr> <td data-bbox="408 810 549 889">30</td> <td data-bbox="549 810 922 889">Continuous rated operating voltage</td> <td data-bbox="922 810 1516 889">440 volt +/- 10%</td> </tr> <tr> <td data-bbox="408 889 549 1001">31</td> <td data-bbox="549 889 922 1001">High voltage withstand capacity (Verification as per IS/IEC 61439 (Part 2))</td> <td data-bbox="922 889 1516 1001">2000 volt at 50 Hz for 1minute</td> </tr> <tr> <td data-bbox="408 1001 549 1097">32</td> <td data-bbox="549 1001 922 1097">Insulation resistance ph-ph & ph-earth</td> <td data-bbox="922 1001 1516 1097">Minimum 10MOhm with 500V Megger</td> </tr> <tr> <td data-bbox="408 1097 549 1151">33</td> <td data-bbox="549 1097 922 1151">Labels & name plates</td> <td data-bbox="922 1097 1516 1151">As per specification</td> </tr> <tr> <td data-bbox="408 1151 549 1229">34</td> <td data-bbox="549 1151 922 1229">Surface preparation for painting</td> <td data-bbox="922 1151 1516 1229">Sand blasting or 7 tank process</td> </tr> <tr> <td data-bbox="408 1229 549 1308">35</td> <td data-bbox="549 1229 922 1308">Painting</td> <td data-bbox="922 1229 1516 1308">Power coated grade A PU min thickness 120 micron</td> </tr> <tr> <td data-bbox="408 1308 549 1361">36</td> <td data-bbox="549 1308 922 1361">Shade</td> <td data-bbox="922 1308 1516 1361">International Orange shade No 592 of IS-5</td> </tr> <tr> <td data-bbox="408 1361 549 1500">37</td> <td data-bbox="549 1361 922 1500">Fluorescent strip</td> <td data-bbox="922 1361 1516 1500">2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of Yellow colour each of 75 mm width shall be provided on all sides.</td> </tr> <tr> <td data-bbox="408 1500 549 1554">38</td> <td data-bbox="549 1500 922 1554">Panel drawing</td> <td data-bbox="922 1500 1516 1554">Refer drawing</td> </tr> <tr> <td data-bbox="408 1554 549 1632">39</td> <td data-bbox="549 1554 922 1632">Type Test certificate</td> <td data-bbox="922 1554 1516 1632">Type Test to be conducted on one unit of this design.</td> </tr> </table> | 22 | Fuse Base | 4 no. 160A, Type 1 Per Phase (for Outgoing) | 23 | Make (Fuse Base & Fuse Links) | Schneider/ L&T (L&K)/ Siemens/ GE Power Controls/ HPL/ Havells/ Jean Muller / Bussman. | 24 | Fuses (160A) | HRC plug-in type | 25 | Gland plate at panel bottom | MS, Black powder coated, 3mm thick for Multi core cable. | 26 | Cable termination clearance | 300mm minimum from gland plate | 27 | Earth studs on both side of panel bottom | With M10 galvanized steel nut bolts | 28 | Panel maximum dimensions in mm Mini Pillar with Fuses in mm | Width X Depth X Height 650 X 400 X 1600 (or less) | 29 | Clearance between live parts minimum 25mm(As per IS/IEC 60947 (Part 1)) | Phase - phase & Phase - earth | 30 | Continuous rated operating voltage | 440 volt +/- 10% | 31 | High voltage withstand capacity (Verification as per IS/IEC 61439 (Part 2)) | 2000 volt at 50 Hz for 1minute | 32 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger | 33 | Labels & name plates | As per specification | 34 | Surface preparation for painting | Sand blasting or 7 tank process | 35 | Painting | Power coated grade A PU min thickness 120 micron | 36 | Shade | International Orange shade No 592 of IS-5 | 37 | Fluorescent strip | 2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of Yellow colour each of 75 mm width shall be provided on all sides. | 38 | Panel drawing | Refer drawing | 39 | Type Test certificate | Type Test to be conducted on one unit of this design. | |
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| 23 | Make (Fuse Base & Fuse Links) | Schneider/ L&T (L&K)/ Siemens/ GE Power Controls/ HPL/ Havells/ Jean Muller / Bussman. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 25 | Gland plate at panel bottom | MS, Black powder coated, 3mm thick for Multi core cable. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | Cable termination clearance | 300mm minimum from gland plate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | Earth studs on both side of panel bottom | With M10 galvanized steel nut bolts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | Panel maximum dimensions in mm Mini Pillar with Fuses in mm | Width X Depth X Height 650 X 400 X 1600 (or less) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | Clearance between live parts minimum 25mm(As per IS/IEC 60947 (Part 1)) | Phase - phase & Phase - earth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | Continuous rated operating voltage | 440 volt +/- 10% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | High voltage withstand capacity (Verification as per IS/IEC 61439 (Part 2)) | 2000 volt at 50 Hz for 1minute | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | Labels & name plates | As per specification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | Surface preparation for painting | Sand blasting or 7 tank process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | Painting | Power coated grade A PU min thickness 120 micron | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | Shade | International Orange shade No 592 of IS-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | Fluorescent strip | 2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of Yellow colour each of 75 mm width shall be provided on all sides. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | Panel drawing | Refer drawing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | Type Test certificate | Type Test to be conducted on one unit of this design. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Rev No. | Description | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| R01 | TECHNICAL SPECIFICATION OF Mini Pillar with Fuses 415 V, 400 A | Yash M. Mane  28/02/25 | Ajay V. Potdar  28/02/25 | Ravindra M. Bhanage  28/02/25 |

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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION OF Mini Pillar with Fuses- 415V, 400A |
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| 5.0 | GENERAL CONSTRUCTION | Mini pillar with Fuses - TPN Bus bar with 1 hole (for incomer) & 4 fuses (for outgoing). | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Sr. No. | Parameter | Requirement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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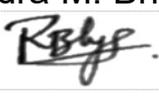
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| | | 9 | Fluorescent strip / painting on panel | <p>2 Nos. retro reflective sticker 3M (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides.</p> <p>Paint shall have good colour retention, UV and weather resistant</p> <p>"STICK NO BILLS" to be painted on both sides of the Compact Sub Feeder Pillar with Black Colour on Yellow Background.</p> | | | | | | |
|-------|-------|--------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|--------|-----|-----|------|
| | | 10 | Dimensions (max) | <table border="1" data-bbox="975 667 1414 763"> <thead> <tr> <th>Width</th> <th>Depth</th> <th>Height</th> </tr> </thead> <tbody> <tr> <td>650</td> <td>400</td> <td>1600</td> </tr> </tbody> </table> | Width | Depth | Height | 650 | 400 | 1600 |
| Width | Depth | Height | | | | | | | | |
| 650 | 400 | 1600 | | | | | | | | |
| | | 11 | Louvers | The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on side's portion. The louvers shall have fine wire mesh. Vermin Proof should be done with gaskets. (Minimum 2 Nos on each sides) | | | | | | |
| | | 12 | Paint shade | International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint. | | | | | | |
| | | 13 | Surface preparation for painting | Sand blasting or 7 tank process followed by powder coating | | | | | | |
| | | 14 | Foundation Bolts | Required Number of Foundation Bolts to be supplied with the panel. | | | | | | |
| | | 15 | External hardware | Galvanized steel nut & bolts, Yellow zinc plated with grade 8.8 for Electrical contacts. Other hardware of grade 4.6 | | | | | | |
| | | 16 | Bolted Covers | Panel Should have internally bolted, removable back cover with handles. | | | | | | |
| | | 17 | Insulation sheets | All enclosure shall be covered with bolted min 1.5 mm thick SMC/FRP sheets from inside. | | | | | | |

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| | | <p>B. Doors:</p> <table border="1"> <thead> <tr> <th data-bbox="421 300 576 338">Sr. No.</th> <th data-bbox="576 300 879 338">Parameter</th> <th data-bbox="879 300 1469 338">Requirement</th> </tr> </thead> <tbody> <tr> <td data-bbox="421 338 576 416">1</td> <td data-bbox="576 338 879 416">Material of door</td> <td data-bbox="879 338 1469 416">Cold Rolled Close Annealed (CRCA) sheet steel - powder coated.</td> </tr> <tr> <td data-bbox="421 416 576 454">2</td> <td data-bbox="576 416 879 454">Thickness</td> <td data-bbox="879 416 1469 454">Thickness - 2 mm</td> </tr> <tr> <td data-bbox="421 454 576 689">3</td> <td data-bbox="576 454 879 689">Type of Door arrangement</td> <td data-bbox="879 454 1469 689"> <p>The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions.</p> <p><i>For Mini pillar with Fuses front & rear access Single door</i></p> </td> </tr> <tr> <td data-bbox="421 689 576 768">4</td> <td data-bbox="576 689 879 768">Insulation</td> <td data-bbox="879 689 1469 768">All doors shall be covered with min 1.5 mm thick SMC/FRP sheets.</td> </tr> <tr> <td data-bbox="421 768 576 1189">5</td> <td data-bbox="576 768 879 1189">Hinges</td> <td data-bbox="879 768 1469 1189"> <p>Minimum 3 Nos. anti-theft hinges for each door. Hinges shall not be visible from outside and should not be removable.</p> <p>Material of hinges and screws: Heavy duty stainless steel (SS) Material and Hinges Pin and Socket to be of Brass to avoid corrosion</p> <p>Hinges shall be of such construction that the doors can be swung open by not less than 120 deg.</p> </td> </tr> <tr> <td data-bbox="421 1189 576 1267">6</td> <td data-bbox="576 1189 879 1267">Engraving</td> <td data-bbox="879 1189 1469 1267">SLD shall be engraved & pasted on inside part of door</td> </tr> <tr> <td data-bbox="421 1267 576 1384">7</td> <td data-bbox="576 1267 879 1384">Gasket</td> <td data-bbox="879 1267 1469 1384">The panel shall be provided with gasket all round the perimeter of covers, gland plates, removable covers and doors</td> </tr> <tr> <td data-bbox="421 1384 576 1422">8</td> <td data-bbox="576 1384 879 1422">Door handles</td> <td data-bbox="879 1384 1469 1422">On front</td> </tr> <tr> <td data-bbox="421 1422 576 1787">9</td> <td data-bbox="576 1422 879 1787">Paint shade</td> <td data-bbox="879 1422 1469 1787"> <p>International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint.</p> <p>2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides.</p> </td> </tr> <tr> <td data-bbox="421 1787 576 1863">10</td> <td data-bbox="576 1787 879 1863">Surface preparation for painting</td> <td data-bbox="879 1787 1469 1863">Sand blasting or 7 tank process followed by powder coating</td> </tr> </tbody> </table> | Sr. No. | Parameter | Requirement | 1 | Material of door | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | 2 | Thickness | Thickness - 2 mm | 3 | Type of Door arrangement | <p>The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions.</p> <p><i>For Mini pillar with Fuses front & rear access Single door</i></p> | 4 | Insulation | All doors shall be covered with min 1.5 mm thick SMC/FRP sheets. | 5 | Hinges | <p>Minimum 3 Nos. anti-theft hinges for each door. Hinges shall not be visible from outside and should not be removable.</p> <p>Material of hinges and screws: Heavy duty stainless steel (SS) Material and Hinges Pin and Socket to be of Brass to avoid corrosion</p> <p>Hinges shall be of such construction that the doors can be swung open by not less than 120 deg.</p> | 6 | Engraving | SLD shall be engraved & pasted on inside part of door | 7 | Gasket | The panel shall be provided with gasket all round the perimeter of covers, gland plates, removable covers and doors | 8 | Door handles | On front | 9 | Paint shade | <p>International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint.</p> <p>2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides.</p> | 10 | Surface preparation for painting | Sand blasting or 7 tank process followed by powder coating |
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| Sr. No. | Parameter | Requirement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Material of door | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Thickness | Thickness - 2 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Type of Door arrangement | <p>The door shall be so fitted as to provide the interior with maximum protection from atmospheric conditions.</p> <p><i>For Mini pillar with Fuses front & rear access Single door</i></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Insulation | All doors shall be covered with min 1.5 mm thick SMC/FRP sheets. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Hinges | <p>Minimum 3 Nos. anti-theft hinges for each door. Hinges shall not be visible from outside and should not be removable.</p> <p>Material of hinges and screws: Heavy duty stainless steel (SS) Material and Hinges Pin and Socket to be of Brass to avoid corrosion</p> <p>Hinges shall be of such construction that the doors can be swung open by not less than 120 deg.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Engraving | SLD shall be engraved & pasted on inside part of door | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Gasket | The panel shall be provided with gasket all round the perimeter of covers, gland plates, removable covers and doors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Door handles | On front | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Paint shade | <p>International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint.</p> <p>2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Surface preparation for painting | Sand blasting or 7 tank process followed by powder coating | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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C. Lock:

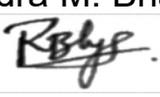
| Sr. No. | Parameter | Requirement |
|---------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1 | Arrangement | 2 types of lock arrangement: a) Padlock b) Sliding Bolt latch |
| 2 | Material of locking mechanism | a) For Padlock: Same as that of enclosure b) Sliding Bolt latch of Aluminium with check nut arrangement for theft proof design |

E. Cable Connection:

| Sr. No. | Parameter | Requirement |
|---------|-----------------------------------------------|-----------------------------------------------------------------------------|
| 1 | Cable entry direction | Cable entry shall be from bottom of Mini Pillar. |
| 2 | Cable termination clearance from gland plate. | 300 mm minimum |
| 3 | Cable termination | All cable terminations shall be from the front side of the Mini Pillar only |

F. Bus- bars:

| Sr. No. | Parameter | Requirement |
|---------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Material grade | Phase & Neutral bus-bars as per IS 5082 - Aluminium grade 19501 (H2). |
| 2 | Bus-bar colour coding for R, Y, B & Neutral | Heat shrinkable insulation sleeves (1.1 kV voltage grade and min. Class A insulation class) of colour Red, Yellow, Blue and Black respectively. |
| 3 | Bus-bar size (in mm) | 1x50x10mm for Phase & Neutral (Al) |
| 4 | Bus-bar configuration | Single bus-bars (per phase and neutral) shall be provided. |
| 5 | Bus-bar arrangement | Horizontally placed, with R phase bus at top. |
| 6 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) |
| 7 | Bus-bar support insulators | 2 nos per phase and neutral |
| 8 | Cable size | Incoming 4C x 300 sq.mm. |
| | | Outgoing 4C x 185 sq.mm. |

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G. Panel Configuration:

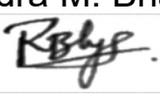
| Sr. No. | Parameter | Requirement |
|---------|-----------------|-------------|
| 1 | No. of Incoming | 1 |
| 2 | No. of outgoing | 4 |

H. Earthing:

| Sr. No. | Parameter | Requirement |
|---------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Earth studs | On both sides of panel bottom. Shall be provide with M10 galvanized steel nut bolts washers. The earthing studs shall be welded from inside the enclosure. |
| 2 | Earth bus-bar | To be provided at panel bottom. 50 x 6 mm GI. The earth bus-bar shall be internally connected to two separate earth terminals located outside (on both sides of enclosure protruding 50 mm outside). The earth bus-bar shall be located at sufficient height from the gland plate. |
| 3 | Flexible earth connection to doors | Flexible PVC Copper wire 1.5 sq.mm. with green colour insulation on all doors. |
| 4 | Body Earthing | All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of green coloured braided copper conductors of adequate size |
| 5 | Neutral Earth link | Earth Bus and Neutral Bus to be shorted with 50 x 6 mm GI link. |

I. Fuse and Fuse base:

| Sr. No. | Parameter | Requirement |
|---------|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 1 | Type of HRC fuse | Knife type DIN HRC fuse with fuse links as per IEC 60269-1, with tinned copper contacts. |
| 2 | Fuse puller | It shall be possible to replace the fuses on live system without compromising on safety. |
| 3 | Fuse base current carrying part | Tin plated copper (with spring) as IS 191 |
| 4 | Fuse base material | DMC |
| 5 | Fuse fixing with bus-bars | Bolted type connection |
| 6 | Fuse Base | Fuse base shall have adequate contact surface with the busbars provided to ensure that no local heating takes place. |
| | | Outgoing 4 nos, 160 A, Type 1 |

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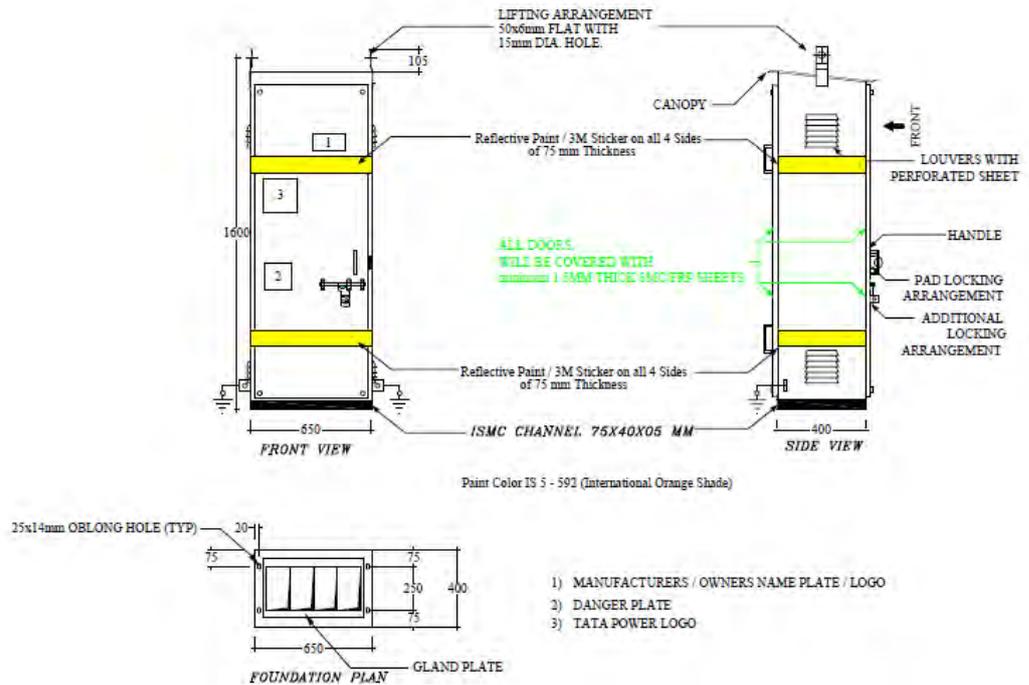
7 Fuse Outlet Clearances

Clearance of minimum 100mm between each fuse outlet and 125mm between fuse outlet and body of panel to be maintained.

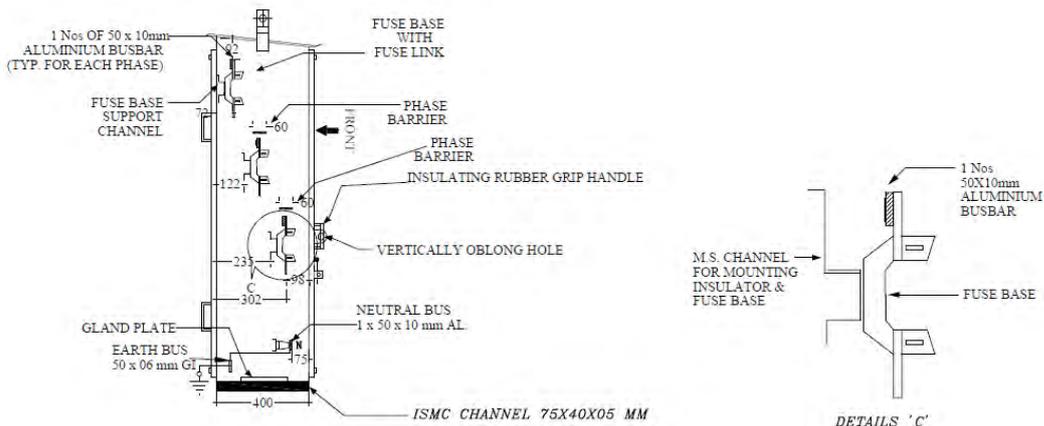
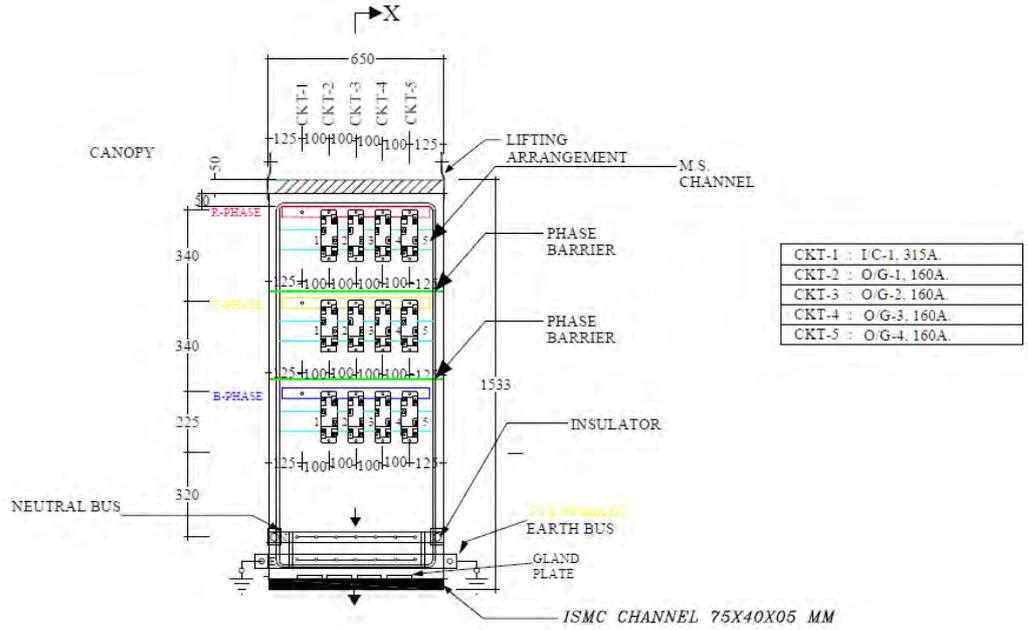
J. Danger Board / Branding:

| Sr. No. | Parameter | Requirement |
|---------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Danger Board | Danger boards shall be provided in local language also on the on front & rear cover with white background and with red letters. |
| 2 | Danger Marking | Front and rear side danger marking with skull and bones with mention of voltage level of 440V AC as per IS 2551. |
| 3 | Branding Plate | Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches as per Annexure 1 on both sides of the panel. i.e. front and back of the panel. |

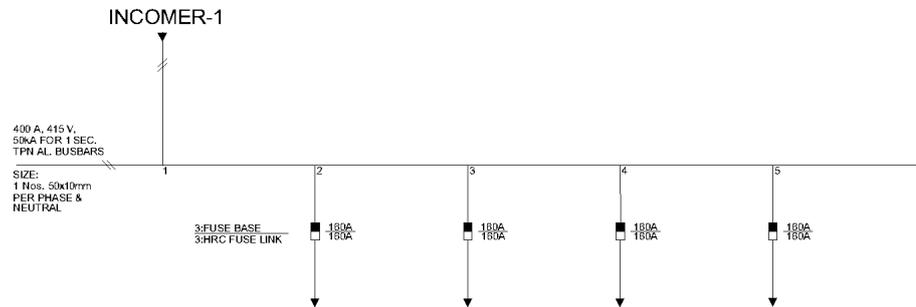
Reference GA DRAWING:



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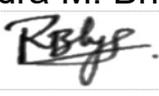
SLD:



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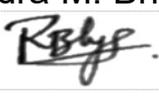
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| 6.0 | NAME PLATE & MARKINGS | 6.1 Name plate- On front door top left side-showing 1) Purchaser name & PO number. 2) Manufacturer name 3) Month / year of manufacturing 4) 'Property of Tata Power' 5) Mini pillar serial number to be provided. | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7.0 | TESTS | All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Sub Feeder Pillar' in addition to others specified in IS/IEC standards. *In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid. | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.1 | TYPE TEST | Type test - Only type tested components – Insulators & aluminium bus bar shall be accepted. For Enclosure with busbar <table border="1" data-bbox="421 891 1453 1312"> <thead> <tr> <th>Sr. No.</th> <th>Test</th> <th>Clause No.</th> <th>Reference Standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Verification of temperature-rise limits</td> <td>Clause No 8.2</td> <td>IS 5039</td> </tr> <tr> <td>2</td> <td>Verification of dielectric properties</td> <td>Clause No 8.3</td> <td>IS 5039</td> </tr> <tr> <td>3</td> <td>Verification of short-circuits strength</td> <td>Clause No 8.4</td> <td>IS 5039</td> </tr> <tr> <td>4</td> <td>Verification of clearance and creepage distances</td> <td>Clause No 8.5</td> <td>IS 5039</td> </tr> <tr> <td>5</td> <td>Verification of degree of protection</td> <td>Clause No 8.6</td> <td>IS 5039</td> </tr> </tbody> </table> | Sr. No. | Test | Clause No. | Reference Standard | 1 | Verification of temperature-rise limits | Clause No 8.2 | IS 5039 | 2 | Verification of dielectric properties | Clause No 8.3 | IS 5039 | 3 | Verification of short-circuits strength | Clause No 8.4 | IS 5039 | 4 | Verification of clearance and creepage distances | Clause No 8.5 | IS 5039 | 5 | Verification of degree of protection | Clause No 8.6 | IS 5039 |
| Sr. No. | Test | Clause No. | Reference Standard | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Verification of temperature-rise limits | Clause No 8.2 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Verification of dielectric properties | Clause No 8.3 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Verification of short-circuits strength | Clause No 8.4 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Verification of clearance and creepage distances | Clause No 8.5 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Verification of degree of protection | Clause No 8.6 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 7.2 | ROUTINE TEST | 1. Visual inspection & dimensional check 2. Insulation Resistance test 3. HV Test | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.3 | ACCEPTANCE TEST | 1) Verification of clearance and creepage distance 2) Paint thickness check 3) Paint Shade 4) Wiring checks 5) Insulation resistance test 6) 1 unit from 1 st lot shall be tested for Temperature rise test along with fuses. (Bidder to arrange for the same) 7) HV Test 8) Visual inspection & dimensional check | | | | | | | | | | | | | | | | | | | | | | | | |

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| 8.0 | TYPE TEST CERTIFICATES | <p>Bidder shall furnish the type test report of 'Mini Pillar of same design' for the tests as mentioned in Clause no.7 of this specification as per reference standards. Complete set of Type Tests shall be conducted at CPRI/ERDA/NABL accredited laboratory. Type test should have been conducted in certified test laboratories during the period not exceeding 10 years from the date of opening the bid. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER COMPANY.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> <p>Bidders shall submit Type Test Undertaking for conducting & submit report with 60 days of Outline Agreement.</p> |
| 9.0 | PRE- DESPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY `s representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection.</p> <p>Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY. Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> a) Test reports b) MDCC issued by TATA POWER COMPANY c) Invoice in duplicate d) Packing list e) Drawings & catalogue f) Delivery Challan g) Other Documents (as applicable) |

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| 10. | INSPECTION AFTER RECEIPT AT STORES | <p>The material received at TATA POWER Store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to TATA POWER COMPANY.</p> <p>If any deviation or anomaly observed at this stage same need to be rectified by bidder at bidders own cost at earliest.</p> <p>The delay in rectification shall lead to any contractual penalty.</p> |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit.</p> <p>The material used for packing shall be environmentally friendly.</p> <p>Packing identification labels- To show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number.</p> <p>Handling instruction- To be marked on packing boxes.</p> <p>No single use plastic to be used in packing material. Packing should be done with environment friendly recyclable materials.</p> |
| 13.0 | TENDER SAMPLE | Not applicable. |

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| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> <p>TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections.</p> <p>If anything missing in QAP and required as per other clauses of this document, bidder is liable to perform the same without cost implication.</p> |
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). |
| 17.0 | SPARES, ACCESSORIES AND TOOLS | Keys of door, 1 set of Fuse Puller with every 30 units. |
| 18.0 | DRAWINGS AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid.</p> <p>a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates g) Any other technical document, if required</p> <p>All the documents & drawings shall be in English language</p> |
| 19 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS: | Clause wise compliance of this specification is to be submitted with bid documents. |

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| R01 | TECHNICAL SPECIFICATION OF Mini Pillar with Fuses 415 V, 400 A | Yash M. Mane  28/02/25 | Ajay V. Potdar  28/02/25 | Ravindra M. Bhanage  28/02/25 |

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(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

| S.No. | Clause No. | Details of deviation with justifications |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------|
| <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.1; font-size: 100px; pointer-events: none;">TATA POWER</div> | | |

20.0

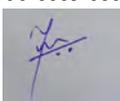
**SCHEDULE
"B" DEVIATIONS**

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Designation

Signature

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Annexure – I

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Tata Power Logo Colour



Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.

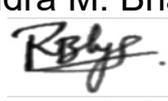


Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)



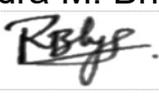
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Annexure 2: Inspection Testing Plan

- 1) Verification of clearance and creepage distance
- 2) Paint thickness check
- 3) Paint Shade
- 4) Wiring checks
- 5) Insulation resistance test
- 6) 1 unit from 1st lot shall be tested for Temperature rise test with fuses. (Bidder to arrange for the same)
- 7) HV Test
- 8) Visual inspection & dimensional check

TATA POWER

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TECHNICAL SPECIFICATION

Mini Pillar without Fuses- 415 V, 400A

*The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra*

| | | |
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TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2021-R01

Document Title: Technical Specification of Mini Pillar without Fuses 415V, 400A

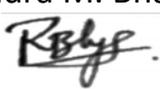
| | | | | | | | | |
|------------|----------------------------------------------|------------|-------------|-----------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------|
| R01 | ENSE-DS-2021-R01 For tendering Purpose | 28/02/2025 | YMM |  | AVP |  | RMB |  |
| R00 | ENSE-DS-2021-R00 For tendering Purpose | 22/12/2023 | YMM | -sd- | AVP | -sd- | RMB | -sd- |
| R1 | SPEC-NET- Mini Pillar-01 | 10/11/2016 | ND | -sd- | SK | -sd- | CC | -sd- |
| R0 | SPEC-NET- Mini Pillar-00 | 30/05/2013 | AP | -sd- | AP | -sd- | CC | -sd- |
| Rev No. | Remarks | Date | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | Prepared By | | Reviewed By | | Approved & Issued By | |

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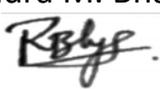
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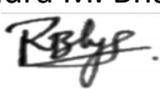
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| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V Mini Pillar complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Ltd. at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the Purchaser (Tata Power Company) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the Purchaser (Tata Power Company) after award of contract. All Sub vendor/Subcontractor list shall also be subject to approval by the Purchaser (Tata Power Company) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | |
|--------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------|---------|-------------------------------------------------------|------|------------------------------------------|--------|----------------------|---------|------------------------------------------------------------------------------------------------------------------|---------|-------------------------------|---------|---------------------------------------------------------------------------------------|---------|----------------------|---------|---------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------|
| 2.0 | APPLICABLE STANDARDS | <p>The equipment (and the materials used) covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, IEC / International standards , with latest amendment from time to time, thereof, some of which are listed below:</p> <p>The Sub Feeder Pillar shall comply with the requirements stated in the latest editions of the following recommendations, standard and specifications:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">INDIAN STANDARDS (IS)</th> <th style="text-align: center;">Title</th> </tr> </thead> <tbody> <tr> <td>IS 5039</td> <td>Specification for distribution pillars below 1000V AC</td> </tr> <tr> <td>IS 5</td> <td>Colour of ready mixed paints and enamels</td> </tr> <tr> <td>IS 191</td> <td>Copper Specification</td> </tr> <tr> <td>IS 5082</td> <td>Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications</td> </tr> <tr> <td>IS 1359</td> <td>Electroplated Coatings of Tin</td> </tr> <tr> <td>IS 1730</td> <td>Dimensions for steel plates, sheets strips and flats for general engineering purposes</td> </tr> <tr> <td>IS 2551</td> <td>Danger Notice plates</td> </tr> <tr> <td>IS 4759</td> <td>Hot-dip Zinc coatings on structural steel and other allied products</td> </tr> <tr> <td>IS 14772</td> <td>General requirements for enclosures for accessories for household and similar fixed electrical installations</td> </tr> </tbody> </table> | INDIAN STANDARDS (IS) | Title | IS 5039 | Specification for distribution pillars below 1000V AC | IS 5 | Colour of ready mixed paints and enamels | IS 191 | Copper Specification | IS 5082 | Wrought aluminium and aluminium alloy bars, rods, tubes, sections, plates and sheets for electrical applications | IS 1359 | Electroplated Coatings of Tin | IS 1730 | Dimensions for steel plates, sheets strips and flats for general engineering purposes | IS 2551 | Danger Notice plates | IS 4759 | Hot-dip Zinc coatings on structural steel and other allied products | IS 14772 | General requirements for enclosures for accessories for household and similar fixed electrical installations |
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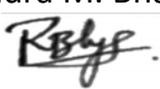
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| IEC 60947-3 | Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC 60947-1 | Low-voltage switchgear and controlgear - Part 1: General rules | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC 61439-2 | Low-voltage switchgear and controlgear assemblies - Part 2: Power switchgear and controlgear assemblies | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| IEC 60529 | Degrees of protection provided by enclosures (IP Code) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | CLIMATIC CONDITIONS OF THE INSTALLATION | <table border="1"> <tbody> <tr> <td>1</td> <td>Maximum ambient temperature</td> <td>43 deg.C</td> </tr> <tr> <td>2</td> <td>Max. Daily average ambient temp</td> <td>35 deg.C</td> </tr> <tr> <td>3</td> <td>Min Ambient Temperature</td> <td>07 deg.C</td> </tr> <tr> <td>4</td> <td>Maximum Relative Humidity</td> <td>100%</td> </tr> <tr> <td>5</td> <td>Minimum Relative Humidity</td> <td>40%</td> </tr> <tr> <td>6</td> <td>Average No. of thunderstorm per annum</td> <td>50</td> </tr> <tr> <td>7</td> <td>Average Annual Rainfall</td> <td>2380mm</td> </tr> <tr> <td>8</td> <td>Average No. of rainy days per annum</td> <td>115</td> </tr> <tr> <td>9</td> <td>Rainy months</td> <td>June to Oct.</td> </tr> <tr> <td>10</td> <td>Altitude above MSL not exceeding</td> <td>300 meters</td> </tr> <tr> <td>11</td> <td>Average Air Pressure</td> <td>29.6-inch Hg</td> </tr> </tbody> </table> | 1 | Maximum ambient temperature | 43 deg.C | 2 | Max. Daily average ambient temp | 35 deg.C | 3 | Min Ambient Temperature | 07 deg.C | 4 | Maximum Relative Humidity | 100% | 5 | Minimum Relative Humidity | 40% | 6 | Average No. of thunderstorm per annum | 50 | 7 | Average Annual Rainfall | 2380mm | 8 | Average No. of rainy days per annum | 115 | 9 | Rainy months | June to Oct. | 10 | Altitude above MSL not exceeding | 300 meters | 11 | Average Air Pressure | 29.6-inch Hg |
| | | 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | Max. Daily average ambient temp | 35 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3 | Min Ambient Temperature | 07 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 4 | Maximum Relative Humidity | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 5 | Minimum Relative Humidity | 40% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 6 | Average No. of thunderstorm per annum | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 7 | Average Annual Rainfall | 2380mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 8 | Average No. of rainy days per annum | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 9 | Rainy months | June to Oct. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10 | Altitude above MSL not exceeding | 300 meters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 11 | Average Air Pressure | 29.6-inch Hg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Atmosphere is generally laden with mild acid and dust suspended during summer months and subjected to fog in winter months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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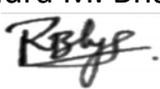
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| 4.0 | GENERAL TECHNICAL REQUIREMENTS | <table border="1"> <thead> <tr> <th>Sr. No</th> <th>Item Description</th> <th>Tata Power Requirement</th> </tr> </thead> <tbody> <tr> <td rowspan="3">1</td> <td rowspan="3">Manufacturer</td> <td>Name</td> </tr> <tr> <td>Manufacturer Address</td> </tr> <tr> <td>Contact telephone no</td> </tr> <tr> <td>2</td> <td>Main bus bar rating</td> <td>500A</td> </tr> <tr> <td rowspan="2">3</td> <td>No of incoming feeders</td> <td>Quantity-1Nos</td> </tr> <tr> <td>Incomer Rating</td> <td>Rating in Amp- 315A</td> </tr> <tr> <td rowspan="2">4</td> <td>No of outgoing feeders</td> <td>Quantity-04nos</td> </tr> <tr> <td>Outgoing Rating</td> <td>Rating in Amp- 160A</td> </tr> <tr> <td>5</td> <td>Panel construction</td> <td>CRCA sheet steel</td> </tr> <tr> <td>6</td> <td>Panel enclosure class</td> <td>IP54 - ingress protection (for outdoor installation)</td> </tr> <tr> <td>7</td> <td>Sheet steel thickness</td> <td>3 mm minimum for covers & canopy, 2 mm for doors(As per IS 5039)</td> </tr> <tr> <td>8</td> <td>Door type for front & rear access</td> <td>Single door for mini pillar</td> </tr> <tr> <td>9</td> <td>Door hinges</td> <td>Three anti theft type hinges</td> </tr> <tr> <td>10</td> <td>Padlocking facility</td> <td>As per Specification</td> </tr> <tr> <td rowspan="2">11</td> <td rowspan="2">Master key for all doors</td> <td>Identical for all panels,</td> </tr> <tr> <td>1 no./ panel</td> </tr> <tr> <td>12</td> <td>External steel hardware</td> <td>Galvanized nut & bolts, yellow zinc plated 8.8 Grade for Electrical Contacts. Other Hardware grade 4.6</td> </tr> <tr> <td>13</td> <td>Phase & neutral Bus bar</td> <td>Aluminium grade 19501 (H2) as per IS 5082</td> </tr> <tr> <td>14</td> <td>Bus bar color coding for R,Y, B & neutral</td> <td>Heat shrinkable sleeves with color Red, Yellow, Blue & Black respectively</td> </tr> <tr> <td>15</td> <td>Bus bar size in mm</td> <td>1x50x10mm for Phase & Neutral (Al)</td> </tr> <tr> <td>16</td> <td>Earth bus size</td> <td>50x6mm GI</td> </tr> <tr> <td>17</td> <td>Main bus bar short circuit withstand capacity</td> <td>Above 50kA for 1 sec as per IEC 61439</td> </tr> <tr> <td rowspan="2">18</td> <td rowspan="2">Main bus bar maximum temperature rise</td> <td>Busbar: 45 deg C</td> </tr> <tr> <td>Terminals: 65 deg C</td> </tr> <tr> <td>19</td> <td>Bus bar support insulators</td> <td>As per IS13410 DMC, 1100V grade</td> </tr> <tr> <td>20</td> <td>Incoming Cable provision</td> <td>4C 300 Sq.mm</td> </tr> </tbody> </table> | Sr. No | Item Description | Tata Power Requirement | 1 | Manufacturer | Name | Manufacturer Address | Contact telephone no | 2 | Main bus bar rating | 500A | 3 | No of incoming feeders | Quantity-1Nos | Incomer Rating | Rating in Amp- 315A | 4 | No of outgoing feeders | Quantity-04nos | Outgoing Rating | Rating in Amp- 160A | 5 | Panel construction | CRCA sheet steel | 6 | Panel enclosure class | IP54 - ingress protection (for outdoor installation) | 7 | Sheet steel thickness | 3 mm minimum for covers & canopy, 2 mm for doors(As per IS 5039) | 8 | Door type for front & rear access | Single door for mini pillar | 9 | Door hinges | Three anti theft type hinges | 10 | Padlocking facility | As per Specification | 11 | Master key for all doors | Identical for all panels, | 1 no./ panel | 12 | External steel hardware | Galvanized nut & bolts, yellow zinc plated 8.8 Grade for Electrical Contacts. Other Hardware grade 4.6 | 13 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 | 14 | Bus bar color coding for R,Y, B & neutral | Heat shrinkable sleeves with color Red, Yellow, Blue & Black respectively | 15 | Bus bar size in mm | 1x50x10mm for Phase & Neutral (Al) | 16 | Earth bus size | 50x6mm GI | 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec as per IEC 61439 | 18 | Main bus bar maximum temperature rise | Busbar: 45 deg C | Terminals: 65 deg C | 19 | Bus bar support insulators | As per IS13410 DMC, 1100V grade | 20 | Incoming Cable provision | 4C 300 Sq.mm |
|-----|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------|------------------------|---|--------------|------|----------------------|----------------------|---|---------------------|------|---|------------------------|---------------|----------------|---------------------|---|------------------------|----------------|-----------------|---------------------|---|--------------------|------------------|---|-----------------------|------------------------------------------------------|---|-----------------------|-------------------------------------------------------------------|---|-----------------------------------|-----------------------------|---|-------------|------------------------------|----|---------------------|----------------------|----|--------------------------|---------------------------|--------------|----|-------------------------|--------------------------------------------------------------------------------------------------------|----|-------------------------|-------------------------------------------|----|-------------------------------------------|---------------------------------------------------------------------------|----|--------------------|------------------------------------|----|----------------|-----------|----|-----------------------------------------------|---------------------------------------|----|---------------------------------------|------------------|---------------------|----|----------------------------|---------------------------------|----|--------------------------|--------------|
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| | | 1 | Manufacturer | Name | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Manufacturer Address | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Contact telephone no | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | Main bus bar rating | 500A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3 | No of incoming feeders | Quantity-1Nos | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Incomer Rating | Rating in Amp- 315A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 4 | No of outgoing feeders | Quantity-04nos | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Outgoing Rating | Rating in Amp- 160A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 5 | Panel construction | CRCA sheet steel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 6 | Panel enclosure class | IP54 - ingress protection (for outdoor installation) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 7 | Sheet steel thickness | 3 mm minimum for covers & canopy, 2 mm for doors(As per IS 5039) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 8 | Door type for front & rear access | Single door for mini pillar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 9 | Door hinges | Three anti theft type hinges | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10 | Padlocking facility | As per Specification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 11 | Master key for all doors | Identical for all panels, | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | 1 no./ panel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 12 | External steel hardware | Galvanized nut & bolts, yellow zinc plated 8.8 Grade for Electrical Contacts. Other Hardware grade 4.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 13 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | Bus bar color coding for R,Y, B & neutral | Heat shrinkable sleeves with color Red, Yellow, Blue & Black respectively | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | Bus bar size in mm | 1x50x10mm for Phase & Neutral (Al) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | Earth bus size | 50x6mm GI | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec as per IEC 61439 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | Main bus bar maximum temperature rise | Busbar: 45 deg C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Terminals: 65 deg C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | Bus bar support insulators | As per IS13410 DMC, 1100V grade | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | Incoming Cable provision | 4C 300 Sq.mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | | 28/02/2025 | 28/02/2025 | 28/02/2025 |

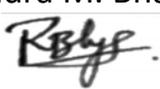
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| | | | |
|--|----|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 21 | Outgoing Cable provision | 4C 185 Sq.mm |
| | 22 | Gland plate at panel bottom | MS, Black powder coated, 3mm thick for Multi core cable. |
| | 23 | Cable termination clearance | 300mm minimum from gland plate |
| | 24 | Earth studs on both side of panel bottom | With M10 galvanized steel nut bolts |
| | 25 | Panel maximum dimensions in mm Mini Pillar in mm | Width X Depth X Height 650 X 400 X 1225 (or less) |
| | 26 | Clearance between live parts minimum 25mm(As per IS 13947-Part I) | Phase - phase & Phase - earth |
| | 27 | Continuous rated operating voltage | 440 volt +/- 10% |
| | 28 | High voltage withstand capacity (Verification as per IS : 8623 (Part 1)) | 2000 volt at 50 Hz for 1minute |
| | 29 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger |
| | 30 | Labels & name plates | As per specification |
| | 31 | Surface preparation for painting | Sand blasting or 7 tank process |
| | 32 | Painting | Power coated grade A PU min thickness 120 micron |
| | 33 | Shade | International Orange shade No 592 of IS-5 |
| | 34 | Fluorescent strip | 2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of Yellow colour each of 75 mm width shall be provided on all sides. |
| | 35 | Panel drawing | Refer drawing |
| | 36 | Type Test certificate | Type Test to be conducted on one unit of this design. |

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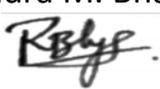
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|-----|-------------------------|-----------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 5.0 | GENERAL CONSTRUCTION | Mini pillar without Fuses - TPN Bus bar with 1 hole (for incomer) & 4 holes (for outgoing). | | |
| | | Sr. No. | Parameter | Requirement |
| | | 1 | Basic Design | A totally enclosed free standing floor mounted self-supporting metal sheet cubical containing bus-bars connected to distribution feeders. |
| | | 2 | Number of Ways | The maximum number of circuits for which the mini pillar without fuses shall be designed: Mini Pillar without Fuses: 5 Way |
| | | 3 | Neutral bus | At bottom of panel, with M10 Nut- Bolts for terminating incoming & outgoing Mini Pillar cable neutral circuit |
| | | 4 | Earth Bus | Earth strip of 50X6mm GI |
| | | A. Enclosure: | | |
| | | Sr. No. | Parameter | Requirement |
| | | 1 | Application | Outdoor type |
| | | 2 | Material | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. |
| 3 | Thickness of enclosure | 3 mm. Able to withstand rough weather conditions. | | |
| 4 | Finishing of enclosure | Pre-treated & powder coating minimum 120 microns at any point of measurement | | |
| 5 | Design | Compact and enclosure shall be designed to facilitate easy maintenance at a minimum height of 270 mm above FFL | | |
| 6 | Design at top | Sloping canopy at top so that rain water does not accumulate. | | |
| | | Minimum 10 degree slanting slope and extended 50 mm outside | | |
| | | Lifting lug- 2 nos. lug welded on top. Eyebolt of suitable sizes shall be provided for lifting arrangements. | | |
| 7 | Degree of Protection | IP54 suitable for outdoor installation | | |

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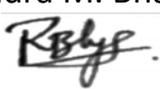
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| | | | | | 8 | Gland plate at panel bottom | Mild Steel 3 mm thick Removable detachable base plate. It shall be possible to temporarily detach the base plate for installation and connection of cables. SS nuts and bolts. | | | | | | | | | | | | | | | | | |
|---|--------------------------|--------------------------------------------------------|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|--------|-----|-----|---------|-----------|-------------|---|------------------|----------------------------------------------------------------|---|-----------|------------------|---|--------------------------|--------------------------------------------------------|
| | | | | | 9 | Fluorescent strip / painting on panel | 2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides. Paint shall have good colour retention, UV and weather resistant "STICK NO BILLS" to be painted on both sides of the Mini Pillar without Fuses with Black Colour on Yellow Background. | | | | | | | | | | | | | | | | | |
| | | | | | 10 | Dimensions (max) | <table border="1"> <tr> <td>Width</td> <td>Depth</td> <td>Height</td> </tr> <tr> <td>650</td> <td>400</td> <td>1225</td> </tr> </table> | Width | Depth | Height | 650 | 400 | 1225 | | | | | | | | | | | |
| | | | | | Width | Depth | Height | | | | | | | | | | | | | | | | | |
| | | | | | 650 | 400 | 1225 | | | | | | | | | | | | | | | | | |
| | | | | | 11 | Paint shade | International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint. | | | | | | | | | | | | | | | | | |
| | | | | | 12 | Surface preparation for painting | Sand blasting or 7 tank process followed by powder coating | | | | | | | | | | | | | | | | | |
| | | | | | 13 | Foundation Bolts | Required Number of Foundation Bolts to be supplied with the panel. | | | | | | | | | | | | | | | | | |
| | | | | | 14 | Louvers | The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on side's portion. The louvers shall have fine wire mesh. Vermin Proof should be done with gaskets. (Minimum 2 Nos on each sides) | | | | | | | | | | | | | | | | | |
| | | | | | 15 | External hardware | Galvanized steel nut & bolts, Yellow zinc plated with grade 8.8 for Electrical contacts. Other hardware of grade 4.6 | | | | | | | | | | | | | | | | | |
| | | | | | 16 | Bolted Covers | Panel Should have internally bolted, removable back cover with handles. | | | | | | | | | | | | | | | | | |
| | | | | | 17 | Insulation sheets | All enclosure shall be covered with bolted min 1.5 mm thick SMC/FRP sheets from inside. | | | | | | | | | | | | | | | | | |
| | | | | | B. Doors: | | | | | | | | | | | | | | | | | | | |
| | | | | | <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Parameter</th> <th>Requirement</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Material of door</td> <td>Cold Rolled Close Annealed (CRCA) sheet steel - powder coated.</td> </tr> <tr> <td>2</td> <td>Thickness</td> <td>Thickness - 2 mm</td> </tr> <tr> <td>3</td> <td>Type of Door arrangement</td> <td>The door shall be so fitted as to provide the interior</td> </tr> </tbody> </table> | | | | | | | | Sr. No. | Parameter | Requirement | 1 | Material of door | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | 2 | Thickness | Thickness - 2 mm | 3 | Type of Door arrangement | The door shall be so fitted as to provide the interior |
| | | | | | Sr. No. | Parameter | Requirement | | | | | | | | | | | | | | | | | |
| | | | | | 1 | Material of door | Cold Rolled Close Annealed (CRCA) sheet steel - powder coated. | | | | | | | | | | | | | | | | | |
| | | | | | 2 | Thickness | Thickness - 2 mm | | | | | | | | | | | | | | | | | |
| 3 | Type of Door arrangement | The door shall be so fitted as to provide the interior | | | | | | | | | | | | | | | | | | | | | | |

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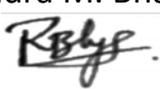
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| | | | with maximum protection from atmospheric conditions. For Mini pillar without Fuses front access Single door |
| 4 | Insulation | | All doors shall be covered with min 1.5 mm thick SMC/FRP sheets. |
| 5 | Hinges | | Minimum 3 Nos. anti-theft hinges for each door. Hinges shall not be visible from outside and should not be removable. |
| | | | Material of hinges and screws: Heavy duty stainless steel (SS) Material and Hinges Pin and Socket to be of Brass to avoid corrosion |
| | | | Hinges shall be of such construction that the doors can be swung open by not less than 120 deg. |
| 6 | Engraving | | SLD shall be engraved & pasted on inside of door |
| 7 | Gasket all around sides of enclosure edge | | The panel shall be provided with gasket all round the perimeter of covers, gland plates, removable covers and doors |
| 8 | Door handles | | On front |
| 9 | Paint shade | | International Orange shade No 592 of IS-5 with minimum 120 microns thickness. Good retention and UV & weather resistant paint. 2 Nos. retro reflective sticker 3M or paint (should reflect vehicular lights during night) strips of yellow colour each of 75 mm width shall be provided on all sides. |
| 10 | Surface preparation for painting | | Sand blasting or 7 tank process followed by powder coating |
| C. Lock: | | | |
| | Sr. No. | Parameter | Requirement |
| | 1 | Arrangement | 2 types of lock arrangement: a) Padlock b) Sliding Bolt latch |
| | 2 | Material of locking mechanism | a) For Padlock: Same as that of enclosure b) Sliding Bolt latch of Aluminium |
| D. Cable Connection: | | | |
| | Sr. No. | Parameter | Requirement |
| | 1 | Cable entry direction | Cable entry shall be from bottom of Mini Pillar. |
| | 2 | Cable termination clearance from gland plate. | 300 mm minimum |

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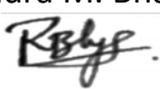
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| | | 3 | Cable termination | All cable terminations shall be from the front side of the Mini Pillar only | |
| E. Bus- bars: | | | | | |
| | | Sr. No. | Parameter | Requirement | |
| | | 1 | Material grade | Phase & Neutral bus-bars as per IS 5082 - Aluminium grade 19501 (H2). | |
| | | 2 | Bus-bar colour coding for R, Y, B & Neutral | Heat shrinkable insulation sleeves (1.1 kV voltage grade and min. Class A insulation class) of colour Red, Yellow, Blue and Black respectively. | |
| | | 3 | Bus-bar size (in mm) | 1x50x10mm for Phase & Neutral (Al) | |
| | | 4 | Bus-bar configuration | Single bus-bars (per phase and neutral) shall be provided. | |
| | | 5 | Bus-bar arrangement | Horizontally placed, with R phase bus at top. | |
| | | 6 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) | |
| | | 7 | Bus-bar support insulators | 2 nos per phase and neutral of DMC, 1100 V grade | |
| | | 8 | Neutral Bus-bar | With holes for connecting outgoing cables up to 300 sq.mm. | |
| | | 9 | Cable size | Incoming | Outgoing |
| | | | | 4C x 300 sq.mm. | 4C x 185 sq.mm. |
| F. Panel Configuration: | | | | | |
| | | Sr. No. | Parameter | Requirement | |
| | | 1 | No. of Incoming | 1 | |
| | | 2 | No. of outgoing | 4 | |
| G. Earthing: | | | | | |
| | | Sr. No. | Parameter | Requirement | |
| | | 1 | Earth studs | On both sides of panel bottom. | |
| | | | | Shall be provide with M10 galvanized stell nut bolts washers. | |

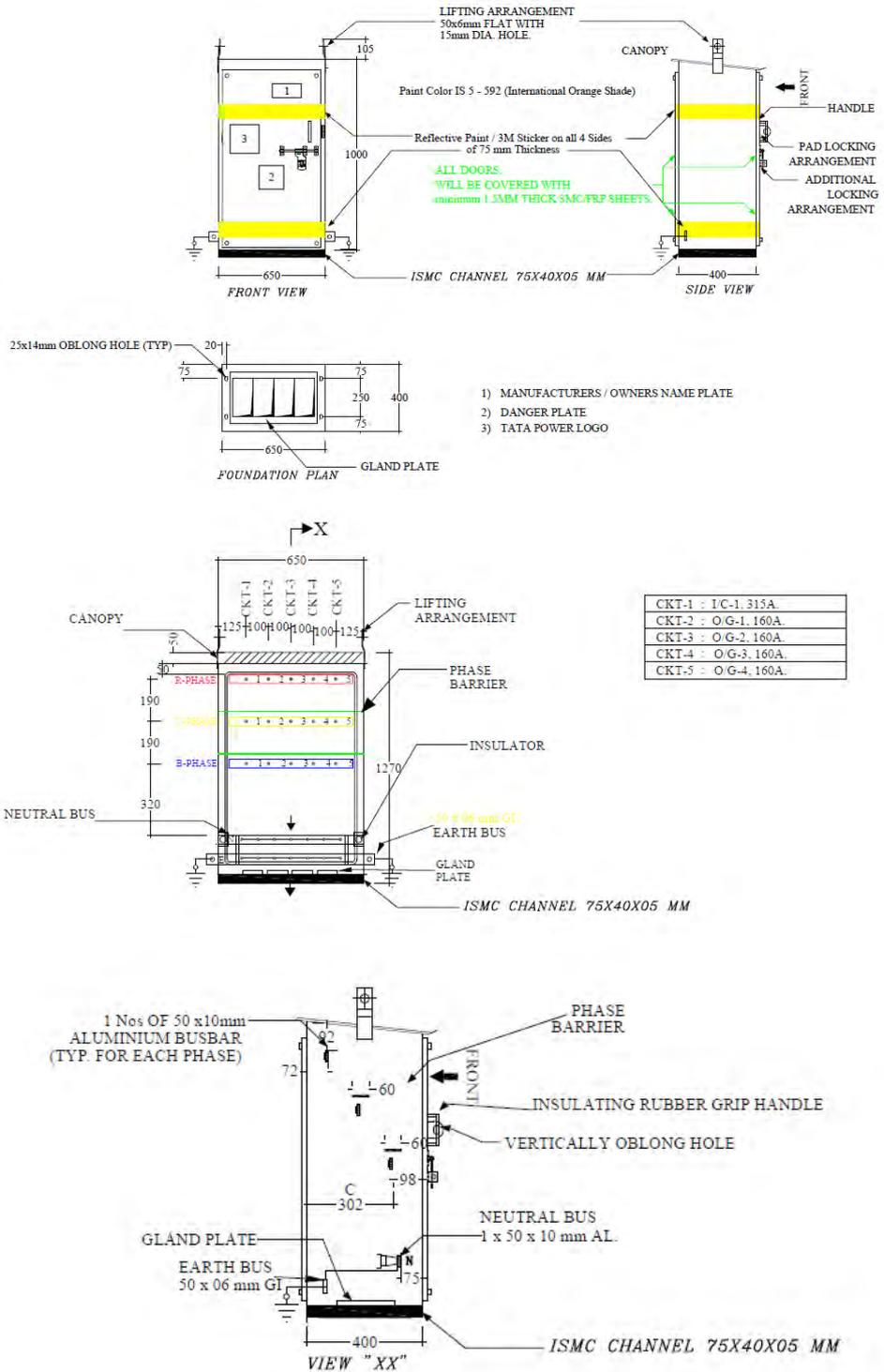
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| | | | The earthing studs shall be welded from inside the enclosure. | | | | | | | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|-------------|---|--------------|---------------------------------------------------------------------------------------------------------------------------------|---|----------------|------------------------------------------------------------------------------------------------------------------|---|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | 2 | Earth bus-bar | <p>To be provided at panel bottom. 50 x 6 mm GI.</p> <p>The earth bus-bar shall be internally connected to two separate earth terminals located outside (on both sides of enclosure).</p> <p>The earth bus-bar shall be located at sufficient height from the gland plate.</p> | | | | | | | | | | | | |
| | | 3 | Flexible earth connection to doors | Flexible PVC Copper wire 1.5 sq.mm. with green colour insulation on all doors. | | | | | | | | | | | | |
| | | 4 | Body Earthing | All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of green coloured braided copper conductors of adequate size | | | | | | | | | | | | |
| | | 5 | Neutral Earth link | Earth Bus and Neutral Bus to be shorted with 50 x 6 mm GI link. | | | | | | | | | | | | |
| <p>H. Danger Board / Branding:</p> <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Parameter</th> <th>Requirement</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Danger Board</td> <td>Danger boards shall be provided in local language also on the on front & rear cover with white background and with red letters.</td> </tr> <tr> <td>2</td> <td>Danger Marking</td> <td>Front and rear side danger marking with skull and bones with mention of voltage level of 440V AC as per IS 2551.</td> </tr> <tr> <td>3</td> <td>Branding Plate</td> <td>Separate metallic name plate with Tata Power Logo of Dimension 6*6 Inches as per Annexure 1 on both sides of the pillar. i.e. front and back side of the pillar.</td> </tr> </tbody> </table> | | | | | Sr. No. | Parameter | Requirement | 1 | Danger Board | Danger boards shall be provided in local language also on the on front & rear cover with white background and with red letters. | 2 | Danger Marking | Front and rear side danger marking with skull and bones with mention of voltage level of 440V AC as per IS 2551. | 3 | Branding Plate | Separate metallic name plate with Tata Power Logo of Dimension 6*6 Inches as per Annexure 1 on both sides of the pillar. i.e. front and back side of the pillar. |
| Sr. No. | Parameter | Requirement | | | | | | | | | | | | | | |
| 1 | Danger Board | Danger boards shall be provided in local language also on the on front & rear cover with white background and with red letters. | | | | | | | | | | | | | | |
| 2 | Danger Marking | Front and rear side danger marking with skull and bones with mention of voltage level of 440V AC as per IS 2551. | | | | | | | | | | | | | | |
| 3 | Branding Plate | Separate metallic name plate with Tata Power Logo of Dimension 6*6 Inches as per Annexure 1 on both sides of the pillar. i.e. front and back side of the pillar. | | | | | | | | | | | | | | |

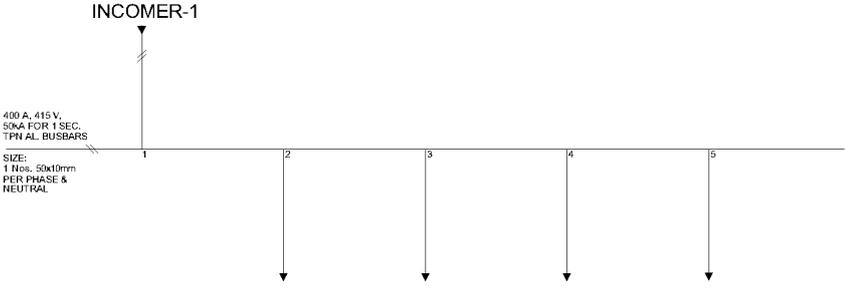
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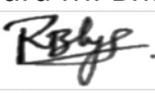
Reference GA DRAWING:



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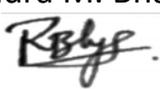
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| | | <p>SLD:</p>  | | | | | | | | | | | | | | | | | | | | | | | | |
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| 6.0 | NAME PLATE & MARKINGS | <p>6.1 Name plate- On front door top left side-showing</p> <ol style="list-style-type: none"> 1) Purchaser name & PO number. 2) Manufacturer name 3) Month / year of manufacturing 4) 'Property of Tata Power' 5) Mini pillar serial number to be provided. | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.0 | TESTS | <p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Sub Feeder Pillar' in addition to others specified in IS/IEC standards.</p> <p>*In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.1 | TYPE TEST | <p>Type test - Only type tested components – Insulators & aluminium bus bar shall be accepted.</p> <p>a. For Enclosure with Bus-bars</p> <table border="1" data-bbox="405 1397 1433 1771"> <thead> <tr> <th>Sr. No.</th> <th>Test</th> <th>Clause No.</th> <th>Reference Standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Verification of temperature-rise limits</td> <td>Clause No 8.2</td> <td>IS 5039</td> </tr> <tr> <td>2</td> <td>Verification of dielectric properties</td> <td>Clause No 8.3</td> <td>IS 5039</td> </tr> <tr> <td>3</td> <td>Verification of short-circuits strength</td> <td>Clause No 8.4</td> <td>IS 5039</td> </tr> <tr> <td>4</td> <td>Verification of clearance and creepage distances</td> <td>Clause No 8.5</td> <td>IS 5039</td> </tr> <tr> <td>5</td> <td>Verification of degree of protection</td> <td>Clause No 8.6</td> <td>IS 5039</td> </tr> </tbody> </table> | Sr. No. | Test | Clause No. | Reference Standard | 1 | Verification of temperature-rise limits | Clause No 8.2 | IS 5039 | 2 | Verification of dielectric properties | Clause No 8.3 | IS 5039 | 3 | Verification of short-circuits strength | Clause No 8.4 | IS 5039 | 4 | Verification of clearance and creepage distances | Clause No 8.5 | IS 5039 | 5 | Verification of degree of protection | Clause No 8.6 | IS 5039 |
| Sr. No. | Test | Clause No. | Reference Standard | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | Verification of clearance and creepage distances | Clause No 8.5 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Verification of degree of protection | Clause No 8.6 | IS 5039 | | | | | | | | | | | | | | | | | | | | | | | |

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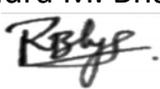
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| 7.2 | ROUTINE TEST | <ol style="list-style-type: none"> 1. Visual inspection & dimensional check 2. Insulation Resistance test 3. HV Test |
| 7.3 | ACCEPTANCE TEST | <ol style="list-style-type: none"> 1) Verification of clearance and creepage distance 2) Paint thickness check 3) Paint Shade 4) Wiring checks 5) Insulation resistance test 6) 1 unit from 1st lot shall be tested for Temperature rise test. (Bidder to arrange for the same) 7) HV Test 8) Visual inspection & dimensional check |
| 8.0 | TYPE TEST CERTIFICATES | <p>Bidder shall furnish the type test report of 'Mini Pillar of same design' for the tests as mentioned in Clause no.7 of this specification as per reference standards. Complete set of Type Tests shall be conducted at CPRI/ERDA/NABL accredited laboratory. Type test should have been conducted in certified test laboratories during the period not exceeding 10 years from the date of opening the bid. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER COMPANY.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> <p>Bidders shall submit Type Test Undertaking for conducting & submit report with 60 days of Outline Agreement.</p> |
| 9.0 | PRE-DESPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY `s representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection.</p> <p>Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY. Five certified copies of all test certificates</p> |

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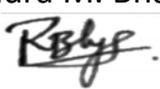
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| | | <p>including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <p>a) Test reports b) MDCC issued by TATA POWER COMPANY c) Invoice in duplicate d) Packing list e) Drawings & catalogue f) Delivery Challan g) Other Documents (as applicable)</p> |
| 10. | INSPECTION AFTER RECEIPT AT STORES | <p>The material received at TATA POWER Store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to TATA POWER COMPANY.</p> <p>If any deviation or anomaly observed at this stage same need to be rectified by bidder at bidders own cost at earliest.</p> <p>The delay in rectification shall lead to any contractual penalty.</p> |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.</p> <p>Packing identification labels- To show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number.</p> <p>Handling instruction- To be marked on packing boxes.</p> <p>No single use plastic to be used in packing material. Packing should be done with environment friendly recyclable materials.</p> |

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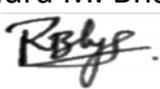
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| 13.0 | TENDER SAMPLE | Not applicable. |
| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> <p>TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections.</p> <p>If anything missing in QAP and required as per other clauses of this document, bidder is liable to perform the same without cost implication.</p> |
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). |
| 17.0 | SPARES, ACCESSORIES AND TOOLS | Keys of door, 1 set of Fuse Puller with every 30 units. |
| 18.0 | DRAWINGS AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid.</p> <p>a) Completely filled in Clause wise compliance of this specification b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates g) Any other technical document, if required</p> <p>All the documents & drawings shall be in English language</p> |

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| 19 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS: | Clause wise compliance of this specification is to be submitted with bid documents. | | | | | | |
|-------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|------------------------------------------|--|--|--|
| 20.0 | SCHEDULE "B" DEVIATIONS | <p style="text-align: center;">(TO BE ENCLOSED WITH TECHNICAL BID)</p> <p>All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">S.No.</th> <th style="width: 20%;">Clause No.</th> <th style="width: 60%;">Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td style="height: 150px;"></td> <td></td> <td></td> </tr> </tbody> </table> <p>We confirm that there are no deviations apart from those detailed above.</p> <p>Seal of the Company:</p> <p>Designation</p> <p>Signature</p> | S.No. | Clause No. | Details of deviation with justifications | | | |
| S.No. | Clause No. | Details of deviation with justifications | | | | | | |
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Annexure – I

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 6*6 Inches in clear font as shown below.

Tata Power Logo Colour



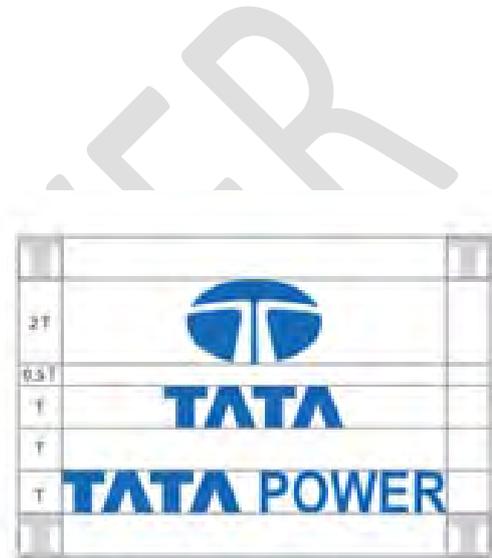
Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.

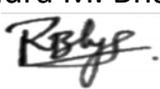


Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)



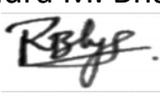
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Annexure 2: Inspection Testing Plan

- 1) Verification of clearance and creepage distance
- 2) Paint thickness check
- 3) Paint Shade
- 4) Wiring checks
- 5) Insulation resistance test
- 6) 1 unit from 1st lot shall be tested for Temperature rise test. (Bidder to arrange for the same)
- 7) HV Test
- 8) Visual inspection & dimensional check

TATA POWER

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TECHNICAL SPECIFICATION

8 Way 3200 A LT Panel

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra

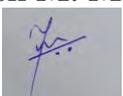
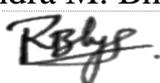
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| ENSE-DS-2033-R01 | | Date of Issue: 25/02/25 |

TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2033-R01

Document Title: Technical SPECIFICATION OF 8 Way 3200 A LT Panels

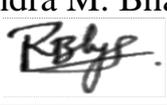
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| R01 | ENSE-DS-2033-R01 | 25/02/2025 | | YMM |  | AVP |  | RMB |  |
| R00 | ENSE-DS-2033-R00 | 11/01/2024 | | YMM |  | AVP |  | RMB |  |
| R2 | SPEC-NET-Feeder Pillar-3200A | 02/03/23 | | MY | -sd- | VK | -sd- | SBM | -sd- |
| Rev No. | Remarks | Date | | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | | Prepared By | | Reviewed By | | Approved & Issued By | |

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| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
| R01 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

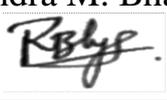
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 8 Way 3200 A LT Panel |
| ENSE-DS-2033-R01 | | Date of Issue: 25/02/25 |

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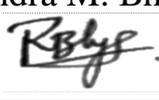
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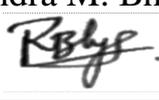
| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V, 3200 A LT Panel with 8 no Outgoing Feeders complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the purchaser (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2.0 | APPLICABLE STANDARDS | <p>The equipment shall conform to this specification and latest revision of following codes with all amendments.</p> <table border="1" data-bbox="427 772 1484 1523"> <thead> <tr> <th></th> <th>Title</th> <th>Indian standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>IS 8623</td> <td>Specification for low voltage switchgear</td> </tr> <tr> <td>2</td> <td>IS 12063/ IEC 60529</td> <td>Classification of degrees of protection provided by Enclosures of Electrical equipment</td> </tr> <tr> <td>3</td> <td>IS 5</td> <td>Color of ready mixed paints</td> </tr> <tr> <td>4</td> <td>IS 5082</td> <td>Wrought Aluminium & Al alloy plates & sheets for electrical application</td> </tr> <tr> <td>5</td> <td>IS 2705</td> <td>Current Transformers</td> </tr> <tr> <td>6</td> <td>IS 2551</td> <td>Danger Notice plates</td> </tr> <tr> <td>7</td> <td>IS 13703-2</td> <td>Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons</td> </tr> <tr> <td>8</td> <td>IEC 255</td> <td>Protection Relays</td> </tr> <tr> <td>9</td> <td>IEC 801</td> <td>Control and monitoring</td> </tr> <tr> <td>10</td> <td>IEC 60947-2 /IS 13947-2</td> <td>Low Voltage Switchgear & control gear</td> </tr> <tr> <td>11</td> <td>IEC 60269</td> <td>Low Voltage Fuses</td> </tr> </tbody> </table> <p>In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</p> | | Title | Indian standard | 1 | IS 8623 | Specification for low voltage switchgear | 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | 3 | IS 5 | Color of ready mixed paints | 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | 5 | IS 2705 | Current Transformers | 6 | IS 2551 | Danger Notice plates | 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | 8 | IEC 255 | Protection Relays | 9 | IEC 801 | Control and monitoring | 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | 11 | IEC 60269 | Low Voltage Fuses |
| | Title | Indian standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | IS 5 | Color of ready mixed paints | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | IS 2705 | Current Transformers | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 11 | IEC 60269 | Low Voltage Fuses | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | CLIMATIC CONDITIONS OF THE | <table border="1" data-bbox="446 1803 1444 1865"> <tbody> <tr> <td>1</td> <td>Maximum ambient temperature</td> <td>43 deg.C</td> </tr> <tr> <td>2</td> <td>Max. Daily average ambient temp</td> <td>35 deg.C</td> </tr> </tbody> </table> | 1 | Maximum ambient temperature | 43 deg.C | 2 | Max. Daily average ambient temp | 35 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Max. Daily average ambient temp | 35 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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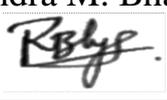
| INSTALLATION | | Sr. No | Item Description | Tata Power Requirement |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| | | 3 | Min Ambient Temperature | 07 deg.C |
| | | 4 | Maximum Relative Humidity | 100% |
| | | 5 | Minimum Relative Humidity | 40% |
| | | 6 | Average No. of thunderstorm per annum | 50 |
| | | 7 | Average Annual Rainfall | 2380mm |
| | | 8 | Average No. of rainy days per annum | 115 |
| | | 9 | Rainy months | June to Oct. |
| | | 10 | Altitude above MSL not exceeding | 300 meters |
| | | 11 | Average Air Pressure | 29.6-inch Hg |
| <p>Atmosphere is generally laden with mild acid and dust suspended during dry months and subjected to fog in cold months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.</p> | | | | |
| 4.0 | GENERAL TECHNICAL REQUIREMENTS | 1 | Manufacturer | Name Manufacturer Address Contact telephone no |
| | | 2 | Breaker Rating (ACB) | 3200A Manual Fixed Type without any microprocessor relay. 230V AC Shunt tripping coil to be provided. |
| | | | Model of ACB | The Model shall be such that current density in current carrying part shall be less than 3 A/sq.mm. (Bidder to mention the model) |
| | | | Approved Make | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton |
| | | 3 | Main bus bar rating | 3200 A |
| | | | Bus bar Size for Phase & Neutral | 4000 sq.mm for Phase & Neutral |
| | | | Earth Bus | 1 x 50 x 10 mm GI |
| | | 4 | Type of Installation | Indoor/Outdoor Type |
| | | 5 | No of Incoming feeders | Qty -1no. of 3200A ACB with 10 Nos of 4CX300 sq.mm Al Ar XLPE cables |
| | | 6 | No of outgoing feeders (8 Way) | Quantity -8 Nos of 630A each with 2 nos of 4CX300 sq.mm Al Ar XLPE cables per O/G |
| | | 7 | Panel construction | CRCA sheet steel of thickness 3 mm |
| | | 8 | Panel enclosure class | IP54 - ingress protection |
| | | 9 | Sheet steel thickness | Doors & Covers - 2.5mm, FRAME - 3mm |

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| 10 | Door type for front & rear access | Double door with rear door bolted |
| 11 | Door hinges | Minimum three anti-theft type hinges self-locking type |
| 12 | Padlocking facility | For front door |
| 13 | Master key for all doors | Identical for all panels, 1 no./ panel to be provided |
| 14 | Hardware & Fasteners | All Nuts, Bolts, Washers shall be Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. Bolts below 12 mm size shall be SS material. |
| 14a | Current Carrying part hardware | Each bolt on Bus Bar and Fuse terminal shall be provided with Belleville washer and plain washer. Wherever required bimetallic washers to be provided |
| 15 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 |
| | Bus bar size in mm for 3200 A O/G | 4000 sq.mm for Phase & Neutral |
| | 3200A ACB Incoming | 4000 sq.mm for Phase & Neutral |
| | ACB O/G LINKS | 4000 sq.mm for Phase & Neutral (Dimensions as per feasibility with Breaker palm connection) |
| 16 | Bus bar color coding for R, Y, B & neutral | Heat shrinkable sleeves with color Red, Yellow, Blue & Black respectively |
| 16 a | Bus Bar Heat shrinkable sleeves | Cross-linked Polyolefin (Bidder to specify thickness) |
| 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec |
| 18 | Permissible maximum temperature rise above ambient of 50°C | Busbar: 45 deg C |
| | Permissible maximum temperature rise above ambient of 50°C | Terminals: 65 deg C |
| 19 | Bus bar support insulators | As per IS13410 SMC / DMC, 1100V grade |
| 20 | Incoming Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| 21 | Outgoing Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| 22 | Gland plate at panel bottom | HRCA MS 3mm thickness |
| 23 | Cable termination clearance | 600 mm minimum from gland plate & ACB |
| 24 | Fuse Base | 800 A |

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| | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller / Bussmann / ABB |
| | 25 | Fuses (630 A) | HRC plug-in type gG (General Purpose, Fast acting fuse) |
| | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller / Bussmann / ABB |
| | 26 | CT's for 3200A Incoming Feeder | 7 Nos. Single resin cast. a) 3 nos dual core CT's of ratio 3200/5A <ul style="list-style-type: none"> • Core 1: Class 0.5 & 15VA burden – For MFM • Core 2: 5P20 & 15VA – For Ashida make O/C+E/F relay b) 3 nos single core CTs of ratio 3200/5 A, Class 0.5 & 15 VA for Energy meter (Energy meter is not in bidder scope) c) 1 no single core CT of ratio 3200/5A, 5P20 & 15 VA for Neutral unbalance protection Approved Make of CTs: Reco/Newtek/Pragati/Kappa/ECS/Adcon |
| | 27 | TTB for Metering | Front connection, Screw Type 3 Phase 4 Wire, 4SF, 50 A, DAV/IMP Make |
| | 28 | Wiring convention for TTB | Incoming from Bottom Side & Outgoing to Meter from Top side |
| | 29 | Multifunction Digital meter | Should be communicable on Modbus RS 485 |
| | 30 | Earth Fault protection relay (NEF) | Alstom make CDG11 self-powered. Relay type is normal inverse with 3 Sec with E/F setting of 0.5 to 2 A |
| | 31 | Earthing Hardware | a) Earthing Nut and Bolt shall be M12 SS b) Washers shall be with Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. |
| | 31a | Panel Earthing | Earthing provision to be provided on both sides with 50 mm extension of main Earth Bus Bar. |
| | 32 | Clearance between live parts | Phase - phase -Minimum 25 mm & Phase - earth - Minimum 20 mm |
| | 33 | Distance between each fuse outlet | Centre to Centre - 150mm (Minimum) |
| | 34 | Distance between fuse outlet & panel surface | 125 mm (Minimum) |
| | 35 | Control terminals for CTs | Stud type with disconnecting facilities |

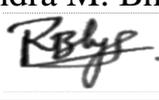
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| | | 36 | Control terminals for Voltage & other circuits | Stud type |
| | | 37 | Illumination and Indicating Bulb | LED |
| | | 38 | Continuous rated operating voltage | 440 volt +/- 10% |
| | | 39 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute |
| | | 40 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger |
| | | 41 | Labels & name plates | As per Specifications |
| | | 42 | Surface preparation for painting | Sand blasting or 7 tank process |
| | | 43 | Painting | Sand blasting or 7 tank process. Light grey shade No 631 of IS-5 Powder coated epoxy paint min thickness 120 micron |
| | | 44 | Power Supply Socket | 5A/15A Plug point socket to be provided |
| | | 45 | Breaker Barrier | Breaker must have a metallic removable sheet from the front side which will act as a barrier between operator and the breaker. Provision must be given for breaker operation to be done through this barrier. |
| | | 46 | Branding Plate | All supplied Units shall be fitted with engraved metallic logo of Tata Power on the front side. The Tata Power Co Ltd to be mentioned below the logo with clear font and Dimension 12*12 Inches. * Refer Annexure 2 |
| | | 47 | Panel Dimensions (Min depth of 800 mm) | L X D X H |
| | | 48 | Numerical Relay | Ashida (ADR 241S) with 4 Element O/C & E/F protection |
| | | 49 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) |
| 5.0 | GENERAL CONSTRUCTION | <p>1) The feeder pillar frame shall be fabricated using suitable mild steel structural section or pressed and shaped Cold Rolled Closed Annealed (CRCA) sheet of thickness 3 mm.</p> <p>2) Frames shall be enclosed by CRCA sheet of thickness 3mm, smoothly finished,</p> | | |

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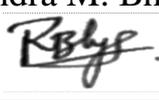
levelled and free from flaws. Doors and cover shall be made of CRCA sheet of thickness not less than 2.5mm. Stiffeners shall be provided, wherever necessary. Gland plates shall be of Hot Rolled Closed Annealed (HRCA) thickness not less than 3 mm. alternatively gland can also be provided between two angles so that removal of gland is easy. The dimension of base frame should be 75mm X 40mm X 5 mm.

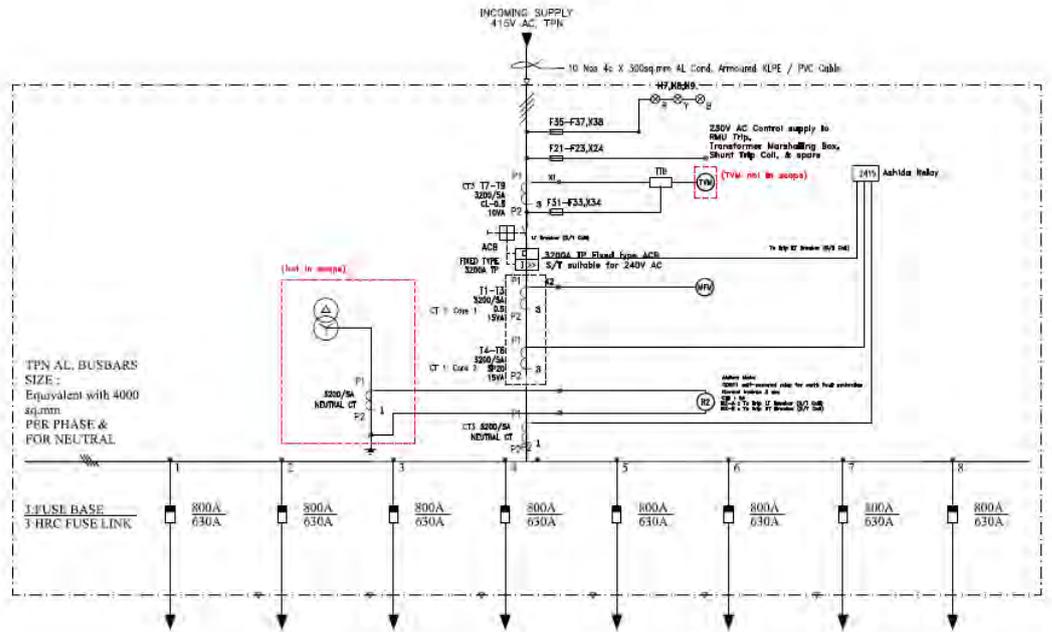
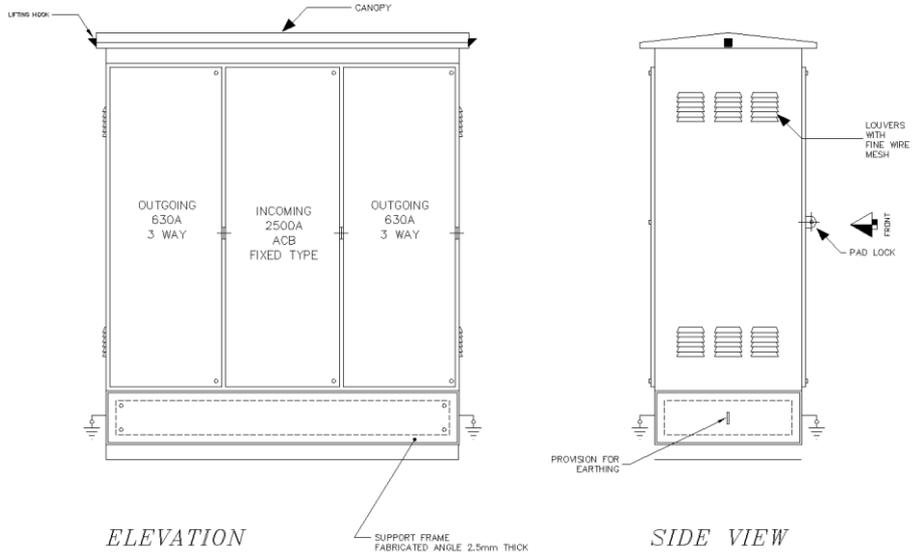
- 3) The panel shall be of metal enclosed and outdoor type, support frame mounted type with canopy of adequate slope to avoid water accumulation. Degree of protection shall be IP 54.
- 4) Breaker compartment and fuse compartment should be separated by metallic sheet; the same should be split suitably in order to avoid local heating due to eddy currents generated by three phase bus bars crossing through the same sheet. The breaker compartment should be in center of panel & Outgoings shall be on both the sides of breaker compartment.
- 5) The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on sides and top portion. The louvers shall have fine wire mesh made of brass. The minimum depth of panel shall be 800 mm.
- 6) Labels on the front and rear indicating the panel designation, phase marking and danger signs shall be provided. Single Line Diagram & feeder details shall be engraved and pasted on inside of panel.
- 7) Danger boards shall be provided in local languages on the Hylam sheet below breaker and on front & rear cover with red background and with white letters.
- 8) Hinged doors of lift off type, with concealed type with brass type hinges and captive screws shall be provided on the front side & Back side. Adequate numbers of door hinges shall be provided and should be durable and easy in operation. All doors shall be provided with padlocking facility. The design of doors should permit inter-changeability. The back-side doors shall have nut and bolt arrangement. All Hinged doors shall be connected to the earth terminal with 2.5 Sq.mm braided copper wires.
- 9) Cable entry facilities at bottom of panel and removable gland plates of size suitable to accommodate incoming & outgoing cables of sizes, 4 Core 300 Sq mm 1.1 KV XLPE Cable, shall be provided at required locations.
- 10) Distance between Gland plate and cable termination of Air Circuit Breaker should be minimum 600mm.
- 11) The panel shall be provided with gasket all around the perimeter of covers, gland plates, removable covers and doors.
- 12) ACB termination shall be with tinned copper or tinned aluminium Bus Bar. Wwherever required bimetallic washer to be provide, if bare copper terminal is provided.
- 13) Busbars shall be of aluminium with Bakelite shrouding, rated for 3200 A, 50 kA for 1 sec and shall have adequate cross section to carry the rated continuous and short time current. Main Bus bar should be continuous/ without any joint. All bus bars, bus taps and joints shall be PVC taped. Neutral bus bar shall be provided on read side & rated for full bus bar rating.

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- 14) The ACBs shall be mechanical operated fixed type 3 Pole with shunt trip coil without any microprocessor protection release. Ashida make (ADR41S) relay to be provided for tripping the breaker with Overcurrent & earth fault protection. Spare ACB contacts for shunt trip should be provided.
- 15) All fuses shall be of the HRC cartridge type mounted on plug-in type fuse bases having a prospective current of not less than 80 kA.
- 16) Phase to phase clearance of 25mm and Phase to Neutral / Earth clearance of 20mm shall be provided in the panel.
- 17) Distance between centre to centre should be minimum 150mm between each fuse outlet and 125mm between fuse outlet and body of panel to be maintained.
- 18) The panel shall be provided with two separate earthing terminals connected to earth bus.
- 19) All instruments shall be connected to the earth terminal using 650V grade PVC insulated 2.5 sq mm stranded tinned copper earthing conductor. All Earthing should be routed properly along with body of panel.
- 20) All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of braided copper conductors of adequate size. Flat earth bus should be protruded out for connection of external earth
- 21) Eyebolt of suitable sizes shall be provided for lifting arrangements.
- 22) All wiring shall be carried out with 650V grade PVC insulated stranded copper conductors of adequate sizes to suit the rated circuit current.
- 23) The panel shall be powder coated with light shade grade no 631 of IS 5.
- 24) Required number of foundation bolts shall be supplied with the panel.
- 25) Control fuses with control terminals for external cable connections shall be in the breaker chamber only.
- 26) The control terminals shall be as follows:
Stud type with disconnecting facilities for CT circuits
Stud type for voltage and other circuits.
- 27) Fuse bases shall have adequate contact surface with the bus bars provided to ensure that no local heating takes place.
- 28) Lighting System in Feeder Pillar should be LED based.

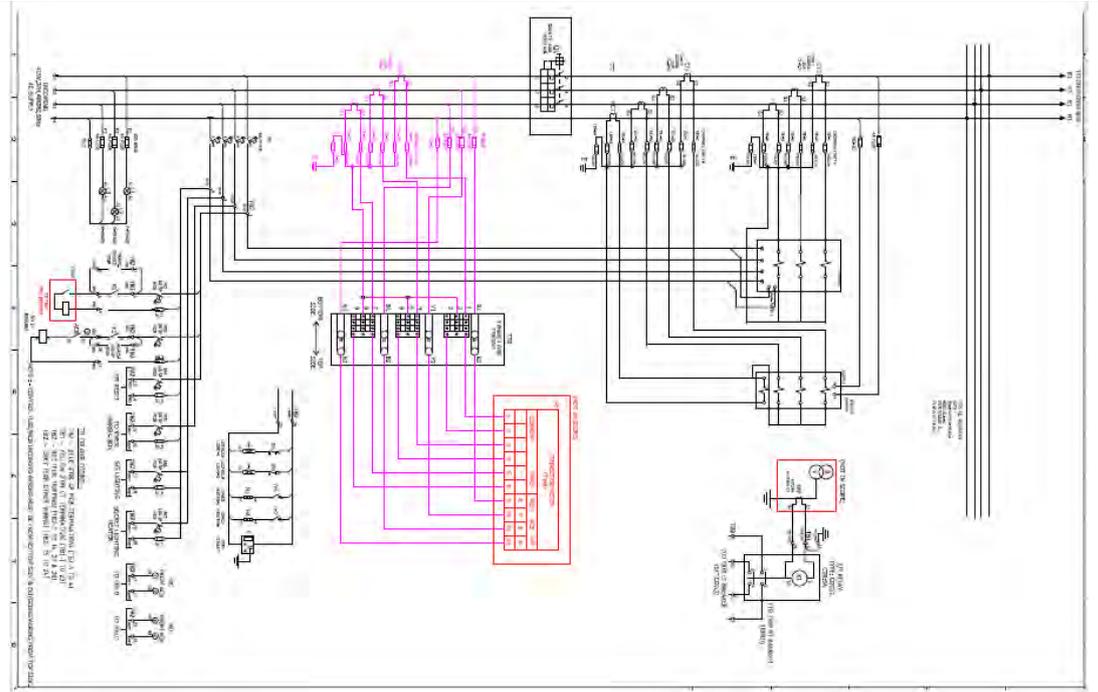
8 Way LT Panel: Representative GA drawing & SLD-

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8 Way Control Wiring Diagram:

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5.1

Specific Requirements

- a) The LT Panel should be 8 way type having 8 Nos. outlets per phase respectively as per tender requirement.
- b) Material Quality Plan, general arrangement drawing and single line diagram of the feeder pillar to be approved before manufacturing.
- c) Adequate cable termination shall be provided as follows

| Sr. No. | TYPE | UoM | No. of Cable | Description |
|---------|---------------------------------------|--------------------|--------------|------------------------------------------------------|
| 1 | 3200A Incomers | 1No. | 10 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 2 | 8 Way Panel 630 A Fuse Outgoing | 8 no. Per outgoing | 2 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |

- d) 3200A Incomer shall be provided with resin cast CTs of ratio 3200/5A for metering & protection.
 3 nos dual core CT 3200A/5A, Core 1: 0.5 CI, Core 2: 5P20, 15 VA, to be used for MFM.
 3 nos single core CT 3200A/5A, 0.5, 15 VA, to be used for Energy metering.
 1 no single core CT 3200A/5A, 5P20, 15 VA, to be used for neutral unbalance protection.
- e) All CT termination should be round plug type. No CT shorting arrangement to be provided. (As per SLD)

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|---------|--------------------|--------------------|------------------------------|
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| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

- f) Secondary wiring shall be carried out with 1.1KV grade PVC insulated stranded copper conductor of 2.5 Sq. mm for CT circuits and 2.5 Sq. mm for PT and other circuits. All wires will be colour coded.

| Sr. No. | Equipment | Color | Nomenclature of TBs | Types of TBs |
|---------|-------------------------------|---------|---------------------|--------------|
| 1. | TBs of 4 Pole MCB Termination | Blue | TB2 | Droppable |
| 2. | TBs for CT Termination | Yellow | TB1 | Droppable |
| 3. | TBs for Tripping | Red | TB2 | Droppable |
| 4. | All others | Default | TB2 | Normal |

- g) The feeder pillar panel shall be provided with Alstom Make CDG11 self-powered relay for earth fault protection. The relay type is normal inverse with 3 sec with E/F setting of 0.5 to 2 A.

- h) Test terminal box for Energy Metering should be Front Connection, Screw Type (4SF), 50 A to be provided and the convention of the wiring in the TTB should be Incoming from the bottom side and outgoing to Meter from top side. There must not be any partition between Relay & metering box in LV compartment. It should be single door compartment. No lugs shall be provided for wires to meter, TTB, and Fuses (PT secondary). Sealing arrangement to be provided for Energy Meters. Inspection glass (Transparent Toughened Glass) to be provided for viewing of meter.

- i) All Protection/ control wiring must terminate in LV compartment.

- j) Provision to be provided for mounting the energy meter with max dimensions as L x B x D: 360 x 200 x 200 mm (Energy meter will be supplied by TPC). The relay and energy meter shall be installed in the breaker compartment with suitable partitions. The relays shall be supplied by the vendor.

- k) The LT panel shall be equipped with shrouded type anti condensation space heaters with thermostat, internal light with switch & 5A/15A metal clad general-purpose plug socket.

- l) The following separate control circuit 20A, 4 pole MCB duly wired up to terminal block for purchaser's use shall be provided before the circuit breaker in feeder pillars leading to following single pole MCB with neutral links (refer SLD):

Phase and neutral for 230V supply to RMU. (6A)

Phase and neutral for 230V supply to Transformer marshalling box. (6A)

Phase and neutral for external shunt trip coil (6A)

Phase and neutral for FPI reset (6A)

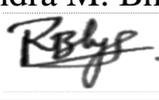
Separate 16A, DP MCB duly wired for Auxiliary supply for LT panel for following purpose,

Phase and neutral for substation lighting (6A)

Phase and neutral for Socket (15A)/ Heater circuit

Phase and neutral for Ashida overcurrent relay (4A)

- m) The following separate control fuses with neutral links duly wired out to a set of stud type link terminals for purchaser's use shall be provided before the circuit

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breaker in feeder pillars Control fuse Incoming wiring must be from bottom side & Outgoing wiring from top side. (refer SLD):

Three phase and neutral for metering circuit.

Three Phase and neutral for indication lamp

n) Locking should be of welded type. Earthing jumpers to be provided for all the doors. Louvers with stainless steel wire mesh to be provided on body side and cover plate.

o) Makes of various bought out items shall be limited to the following:

| Sr. No. | Items | Approved Make |
|---------|-------|------------------------------------------|
| 1 | ACB | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton |
| 2. | CT | Reco/Newtek/Pragati/Kappa/ECS/Adcon |

p) Flexible copper braiding should be provided on the doors. Neutral bus shall be connected with earth bus. All control cable should be multi stranded and FRLS. CT ISF should be less than or equal to 5. Close and Open status of the breaker should be available on SCADA through spare auxiliary contact and on LT panel through LED Lamp.

q) The fuses provide should be of knife type and same should be removable with the help of fuse puller. There shall be no obstruction during removal of outgoing fuses by fuse puller.

r) The safety locking facility to be provided for putting three nos. of safety locks.

s) Panel minimum width in mm: 800 mm

t) The breaker manufacturer to provide the complete support in terms of training; hand holding to our Testing and O&M staff. The breaker manufacturer to give the support service for next 10 years.

u) The robust isolating arrangement in the OG fuse compartment to be made as per the

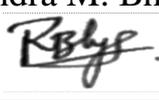
6.0

NAME PLATE AND MARKING

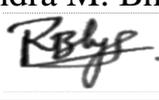
6.1 Name plate- On front door top left side-showing

1) Purchaser name & PO number.

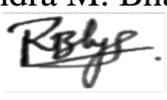
2) Manufacturer name

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| R01 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

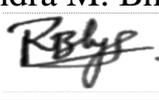
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| | | <p>3) Month / year of manufacturing 4) 'Property of Tata Power'</p> <p>6.2 Marking for panel earth stud- Black letter 'E', on riveted Al label</p> <p>6.3 Danger board in English & local language, riveted on doors- White colour background with red lettering on 1.6mm thick Al plate.</p> <p>6.4 SLD shall be engraved & pasted on inside of door.</p> <p>6.5 CT Serial Nos., Ratio & ACB Serial Nos. to be written on doors with marker pen.</p> <p>6.6 Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown in Annexure-2.</p> |
| 7.0 | TESTS | <p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Feeder Pillar' in addition to others specified in IS/IEC standards.</p> <p>*In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid.</p> |
| 7.1 | Type test | <p>Type test - Only type tested components – ACBs, Fuses, Insulators & aluminium bus bar shall be accepted. Following type test shall be carried out on the assembly.</p> <p>a) Verification of temperature-rise limits – Clause 8.2.1 of IS 8623 b) Verification of dielectric properties – Clause 8.2.2 of IS 8623 c) Verification of short-circuits strength – Clause 8.2.3 of IS 8623 d) Verification of continuity of the protective circuit – Clause 8.2.4 of IS 8623 e) Verification of clearance and creepage distances – Clause 8.2.5 of IS 8623 f) Verification of mechanical operation – Clause 8.2.6 of IS 8623 f) Verification of degree of protection – Clause 8.2.7 of IS 8623</p> |
| 7.2 | Routine test | <p>Acceptance & routine test- (Inspection test witness by purchaser as per approved Quality Assurance Plan)</p> <p>1) Visual inspection, dimension checks & paint thickness checks. 2) Bill of material check 3) Insulation resistance test 4) High voltage test 5) Operational check 6) Verification of dielectric properties 7) Tolerances on panel dimensions- Maximum +/- 5mm 8) No negative tolerance on bus bar dimensions & bus bar clearances 9) Stability test shall be conducted on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> |
| 7.3 | Acceptance test | <p>1) Visual inspection & dimensional check 2) Verification of clearance and creepage distance 3) Paint thickness check 4) Wiring checks 5) Insulation resistance test 6) HV test</p> |

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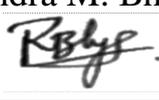
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| | | <p>7) Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> <p>8) 1 unit from 1st lot shall be tested for Temperature rise test with ACB and fuses. (Bidder to arrange for the same, either in factory or in external lab)</p> |
| 8.0 | TYPE TEST CERTIFICATE | <p>The Bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. Type Test to be conducted on similar Design/ rating panel. All the tests shall be conducted at CPRI / ERDA/ NABL as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 10 years from the date of opening the bid.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> |
| 9.0 | PRE-DISPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY 's representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection.</p> <p>Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY.</p> <p>Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> Test reports MDCC issued by TATA POWER COMPANY Invoice in duplicate Packing list Drawings & catalogue Delivery Challan Other Documents (as applicable). |
| 10.0 | INSPECTION AFTER RECEIPT AT STORE | <p>The material received at TPC, Mumbai store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection or any other parameters observed after delivery.</p> <p>The material should be delivered at TPC, Mumbai stores within 45 days from the date of manufacturing, same shall be checked during delivery and overdue material shall not be accepted. Bidders to plan the delivery accordingly.</p> |

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| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

| | | |
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| | | <p>Bidders to attend and rectify the same at his own cost. The material shall be accepted in stores only after rectification of any observed flaw. The delay in rectification shall lead to any contractual penalty.</p> <p>Billing shall be processed only after acceptance of the material.</p> |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract.</p> <p>In the event any defect is found by the TATA POWER COMPANY up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements) Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the TATA POWER COMPANY will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit.</p> <ol style="list-style-type: none"> 1) Packing protection- Against shocks, vibration & corrosion, damages during transportation 2) Packing identification labels, to show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number 3) Handling instruction- To be marked on packing boxes. 4) Bidders should prefer to use recyclable & environmentally friendly materials for packing. 5) No single use plastic to be used. 6) Packing should be done with environment friendly recyclable materials. |
| 13.0 | TENDER SAMPLE | Not Applicable |
| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> |

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| | | TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections. If anything missing in QAP and required as per other clauses of this document, bidder is liable to perform the same without cost implication. | | | | | | |
|--------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|------------------------------------------|--|--|--|
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards and as specified above. | | | | | | |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). | | | | | | |
| 17.0 | SPARES, ACCESSORIES, AND TOOLS | Keys of door | | | | | | |
| 18.0 | DRAWING AND DOCUMENTS | Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid. All the documents & drawings shall be in English language a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates g) Any other technical document, if required | | | | | | |
| 19.0 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS | Bidders to comply for all above requirement of specifications clauses & submit signed and stamp copy as technical compliance document. | | | | | | |
| 20.0 | SCHEDULE "B" DEVIATIONS | The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications. (TO BE ENCLOSED WITH THE BID) All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications: <table border="1" data-bbox="427 1771 1471 1832"> <thead> <tr> <th>Sr.No.</th> <th>Clause No.</th> <th>Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | Sr.No. | Clause No. | Details of deviation with justifications | | | |
| Sr.No. | Clause No. | Details of deviation with justifications | | | | | | |
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| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| R01 | Yash M. Mane  25/02/2025 | Ajay V. Potdar  25/02/2025 | Ravindra M. Bhanage  25/02/2025 |

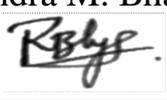
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We confirm that there are no deviations apart from those detailed above.

Seal of the Company

Signature :

Designation :

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R01 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

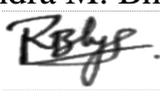
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 8 Way 3200 A LT Panel |
| ENSE-DS-2033-R01 | | Date of Issue: 25/02/25 |

Annexure – 1

Inspection Testing Plan

1. Visual inspection & dimensional check
2. Verification of clearance and creepage distance
3. Paint thickness check
4. Wiring checks
5. Insulation resistance test
6. HV test
7. Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function
8. 1 unit from 1st lot shall be tested for Temperature rise test with ACB and fuses. (Bidder to arrange for the same, either in factory or in external lab)

TATA POWER

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| R01 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

Annexure – 2

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.

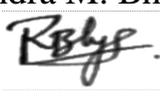


Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)



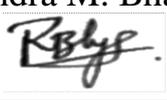
| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| R01 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

| | | |
|--------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------|
| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 8 Way 3200 A LT Panel |
| ENSE-DS-2033-R01 | | Date of Issue: 25/02/25 |

Annexure – 3

Reference drawings

TATA POWER

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R01 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

INCOMING SUPPLY
415V AC, TPN

10 Nos 4c X 300sq.mm AL Cond. Armoured XLPE / PVC Cable.

H7,H8,H9.

230V AC Control supply to
RMU Trip,
Transformer Marshalling Box,
Shunt Trip Coil, & spare

(TVM not in scope)

241S Ashida Relay

CT3 T7-T9
3200/5A
CL-0.5
10VA

LT Breaker (S/T Coil)

ACB
FIXED TYPE
3200A TP
3200A TP Fixed type ACB
S/T suitable for 240V AC

To Trip LT Breaker (S/T Coil)

(Not in scope)

T1-T3
3200/5A
CT 1: Core 1 0.5
15VA

T4-T6
3200/5A
CT 1: Core 2 5P20
15VA

Alstom Make
CDG11 self-powered relay for earth fault protection
Normal Inverse 3 sec
CTR : 5A
R2-A : To Trip LT Breaker (S/T Coil)
R2-B : To Trip HT Breaker (S/T Coil)

CT3 3200/5A
NEUTRAL CT

3200/5A
NEUTRAL CT

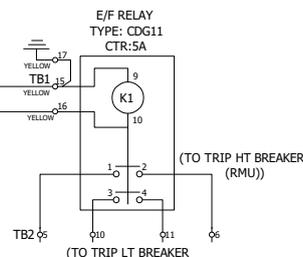
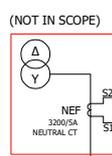
TPN AL. BUSBARS
SIZE :
Equivalent with 4000
sq.mm
PER PHASE &
FOR NEUTRAL

3:FUSE BASE
3:HRC FUSE LINK

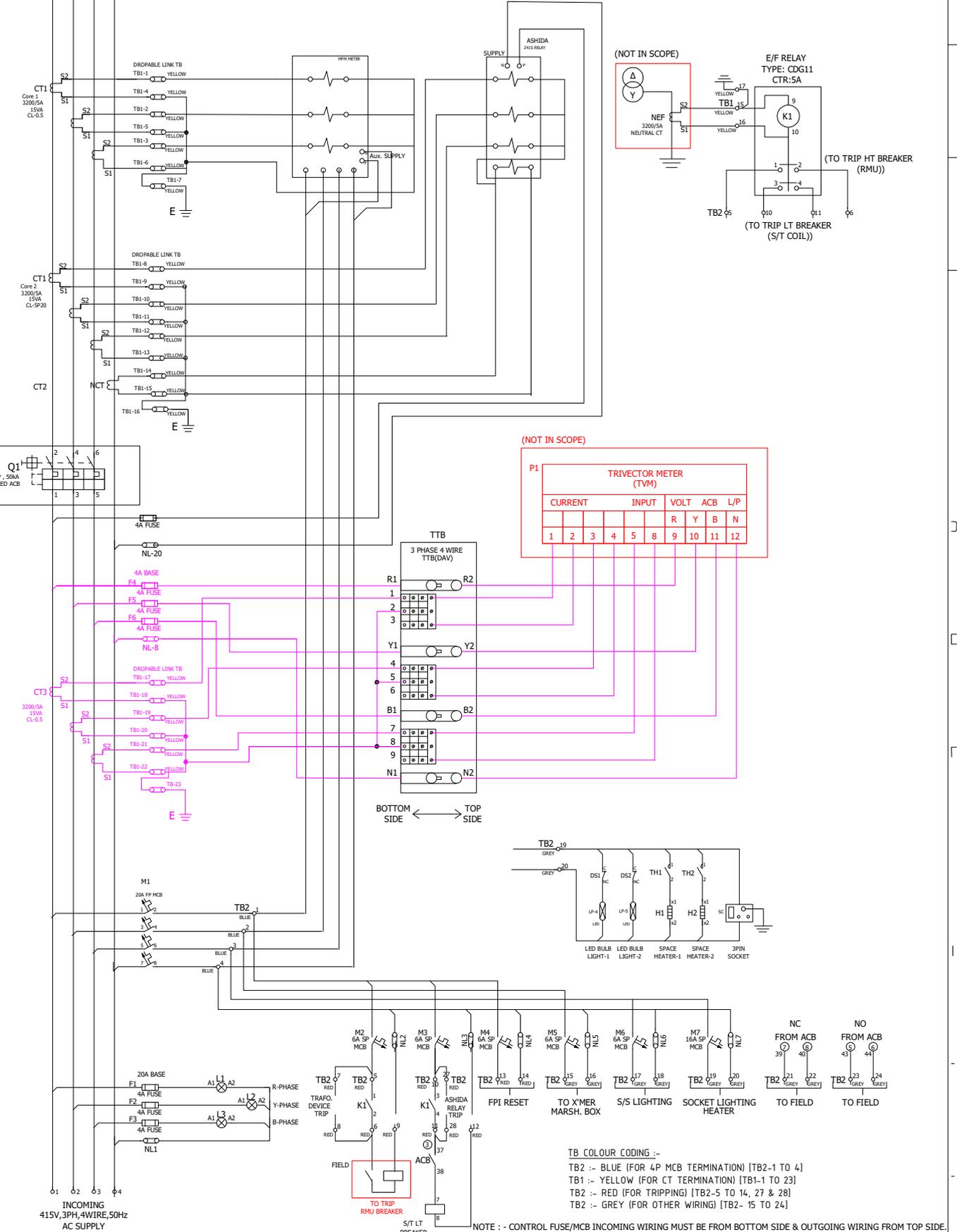
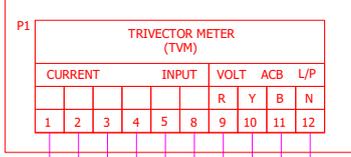
800A
630A

TO OUTGOING BUS
R1 Y1 B1 N1

TPN AL. BUSBARS
SIZE :
Equivalent with area
4000 sq.mm
PER PHASE &
FOR NEUTRAL.



(NOT IN SCOPE)



TB COLOUR CODING :-
TB2 :- BLUE (FOR 4P MCB TERMINATION) [TB2-1 TO 4]
TB1 :- YELLOW (FOR CT TERMINATION) [TB1-1 TO 23]
TB2 :- RED (FOR TRIPPING) [TB2-5 TO 14, 27 & 28]
TB2 :- GREY (FOR OTHER WIRING) [TB2- 15 TO 24]

NOTE :- CONTROL FUSE/MCB INCOMING WIRING MUST BE FROM BOTTOM SIDE & OUTGOING WIRING FROM TOP SIDE.

TECHNICAL SPECIFICATION

3200 A LT Panel with MCCB & Fuse

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra

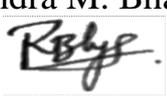
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 3200 A LT Panel with MCCB & Fuse |
| ENSE-DS-2029-R01 | | Date of Issue: 25/02/25 |

TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2029-R01

Document Title: Technical SPECIFICATION OF 3200 A LT Panels with MCCB & Fuse

| R01 | ENSE-DS-2029-R01 | 25/02/2025 | | YMM |  | AVP |  | RMB | |
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| | | | | Prepared By | | Reviewed By | | Approved & Issued By | |

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| R01 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
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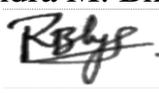
| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V, 3200 A LT Panel with 2 no's 3P 1200 A MCCB, 2 no's 630 A HRC Fuse & 2 no's 800 A HRC Fuse Outgoing Feeders complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the purchaser (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2.0 | APPLICABLE STANDARDS | <p>The equipment shall conform to this specification and latest revision of following codes with all amendments.</p> <table border="1"> <thead> <tr> <th></th> <th>Title</th> <th>Indian standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>IS 8623</td> <td>Specification for low voltage switchgear</td> </tr> <tr> <td>2</td> <td>IS 12063/ IEC 60529</td> <td>Classification of degrees of protection provided by Enclosures of Electrical equipment</td> </tr> <tr> <td>3</td> <td>IS 5</td> <td>Color of ready mixed paints</td> </tr> <tr> <td>4</td> <td>IS 5082</td> <td>Wrought Aluminium & Al alloy plates & sheets for electrical application</td> </tr> <tr> <td>5</td> <td>IS 2705</td> <td>Current Transformers</td> </tr> <tr> <td>6</td> <td>IS 2551</td> <td>Danger Notice plates</td> </tr> <tr> <td>7</td> <td>IS 13703-2</td> <td>Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons</td> </tr> <tr> <td>8</td> <td>IEC 255</td> <td>Protection Relays</td> </tr> <tr> <td>9</td> <td>IEC 801</td> <td>Control and monitoring</td> </tr> <tr> <td>10</td> <td>IEC 60947-2 /IS 13947-2</td> <td>Low Voltage Switchgear & control gear</td> </tr> <tr> <td>11</td> <td>IEC 60269</td> <td>Low Voltage Fuses</td> </tr> </tbody> </table> <p>In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</p> | | Title | Indian standard | 1 | IS 8623 | Specification for low voltage switchgear | 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | 3 | IS 5 | Color of ready mixed paints | 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | 5 | IS 2705 | Current Transformers | 6 | IS 2551 | Danger Notice plates | 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | 8 | IEC 255 | Protection Relays | 9 | IEC 801 | Control and monitoring | 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | 11 | IEC 60269 | Low Voltage Fuses |
| | Title | Indian standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | IS 5 | Color of ready mixed paints | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 5 | IS 2705 | Current Transformers | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | IS 2551 | Danger Notice plates | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | IEC 60269 | Low Voltage Fuses | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | CLIMATIC CONDITIONS OF | <table border="1"> <tr> <td>1</td> <td>Maximum ambient temperature</td> <td>43 deg.C</td> </tr> </table> | 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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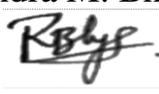
| THE INSTALLATION | 2 | Max. Daily average ambient temp | 35 deg.C |
|---------------------|----|---------------------------------------|--------------|
| | 3 | Min Ambient Temperature | 07 deg.C |
| | 4 | Maximum Relative Humidity | 100% |
| | 5 | Minimum Relative Humidity | 40% |
| | 6 | Average No. of thunderstorm per annum | 50 |
| | 7 | Average Annual Rainfall | 2380mm |
| | 8 | Average No. of rainy days per annum | 115 |
| | 9 | Rainy months | June to Oct. |
| | 10 | Altitude above MSL not exceeding | 300 meters |
| | 11 | Average Air Pressure | 29.6-inch Hg |

Atmosphere is generally laden with mild acid and dust suspended during dry months and subjected to fog in cold months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.

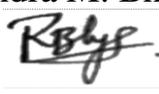
| 4.0 GENERAL TECHNICAL REQUIREMENTS | Sr. No | Item Description | Tata Power Requirement | |
|---------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--|
| | 1 | Manufacturer | Name | |
| | | | Manufacturer Address | |
| | | | Contact telephone no | |
| | 2 | Breaker Rating (ACB) | 3200A Manual Fixed Type without any microprocessor relay. 230V AC Shunt tripping coil to be provided. | |
| | | Model of ACB | The Model shall be such that current density in current carrying part shall be less than 3 A/sq.mm. (Bidder to mention the model) | |
| | | Approved Make | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton | |
| | 3 | Main bus bar rating | 3200 A | |
| | | Bus bar Size for Phase & Neutral | 4000 sq.mm for Phase & Neutral | |
| | | Earth Bus | 1 x 50 x 10 mm GI | |
| | 4 | Type of Installation | Outdoor Type | |
| 5 | No of Incoming feeders | Qty -1no. of 3200A ACB with 10 Nos of 4CX300 sq.mm Al Ar XLPE cables | | |
| 6 | No of outgoing feeders – 1200 A MCCB | Quantity - 2 Nos of 1200A each with 4 no's of 4CX300 sq.mm Al Ar XLPE cables per O/G | | |
| | No of outgoing feeders – HRC Fuse | Quantity – 2 Nos of 800A each With 3 no's of 4CX300 sq.mm Al Ar XLPE cables per O/G 2 Nos of 630A each With 2 no's of 4CX300 sq.mm Al Ar XLPE cables per O/G | | |
| 7 | Panel construction | CRCA sheet steel of thickness 3 mm | | |

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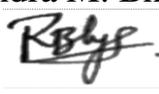
| | | |
|------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | Panel enclosure class | IP54 - ingress protection |
| 9 | Sheet steel thickness | Doors & Covers - 2.5mm, FRAME - 3mm |
| 10 | Door type for front & rear access | Double door with rear door bolted |
| 11 | Door hinges | Minimum three anti-theft type hinges self-locking type |
| 12 | Padlocking facility | For front door |
| 13 | Master key for all doors | Identical for all panels, 1 no./ panel to be provided |
| 14 | Hardware & Fasteners | All Nuts, Bolts, Washers shall be Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. Bolts below 12 mm size shall be SS material. |
| 14a | Current Carrying part hardware | Each bolt on Bus Bar and Fuse terminal shall be provided with Belleville washer and plain washer. Wherever required bimetallic washers to be provided |
| 15 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 |
| | Bus bar size in mm for 3200 A O/G | 4000 sq.mm for Phase & Neutral |
| | 3200A ACB Incoming | 4000 sq.mm for Phase & Neutral |
| | ACB O/G LINKS | 4000 sq.mm for Phase & Neutral (Dimensions as per feasibility with Breaker palm connection) |
| 16 | Bus bar colour coding for R, Y, B & neutral | Heat shrinkable sleeves with colour Red, Yellow, Blue & Black respectively |
| 16 a | Bus Bar Heat shrinkable sleeves | Cross-linked Polyolefin (Bidder to specify thickness) |
| 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec |
| 18 | Permissible maximum temperature rise above ambient of 50°C | Busbar: 45 deg C |
| | Permissible maximum temperature rise above ambient of 50°C | Terminals: 65 deg C |
| 19 | Bus bar support insulators | As per IS13410 SMC / DMC, 1100V grade |
| 20 | Incoming Cable Size | 4C 300 Sq.mm Al Ar XLPE |

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| | | 21 | Outgoing Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | | 22 | Gland plate at panel bottom | HRCA MS 3mm thickness |
| | | 23 | Cable termination clearance | 600 mm minimum from gland plate & ACB |
| | | 24 | Fuse Base | 800 A |
| | | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Bussmann / ABB |
| | | 25 | Fuses (800 A & 630 A) | HRC plug-in type gG (General Purpose, Fast acting fuse) |
| | | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Bussmann / ABB |
| | | 26 | 1200 A MCCB 3P | MCCB shall be with Micro Processor Based Release having LSIG Protections. The MCCB shall have Spreader Links & Phase Barriers. |
| | | | | Approved Make - Schneider/L&T/ABB/Siemens/Eaton |
| | | 27 | CT's for 3200A Incoming Feeder | 7 Nos. Single resin cast. a) 3 no's dual core CT's of ratio 3200/5A <ul style="list-style-type: none"> • Core 1: Class 0.5 & 15VA burden – For MFM • Core 2: 5P20 & 15VA – For Ashida make O/C+E/F relay |
| | | | | b) 3 no's single core CTs of ratio 3200/5 A, Class 0.5 & 15 VA for Energy meter (Energy meter is not in bidder scope) c) 1 no single core CT of ratio 3200/5A, 5P20 & 15 VA for Neutral unbalance protection Approved Make of CTs: Reco/Newtek/Pragati/Kappa/ECS/Adcon |
| | | 28 | TTB for Metering | Front connection, Screw Type 3 Phase 4 Wire, 4SF, 50 A, DAV/IMP Make |
| | | 29 | Wiring convention for TTB | Incoming from Bottom Side & Outgoing to Meter from Top side |
| | | 30 | Multifunction Digital meter | Should be communicable on Modbus RS 485 |
| 31 | Earth Fault protection relay (NEF) | Alstom make CDG11 self-powered. Relay type is normal inverse with 3 Sec with E/F setting of 0.5 to 2 A | | |
| 32 | Earthing Hardware | a) Earthing Nut and Bolt shall be M12 SS b) Washers shall be with Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. | | |
| 32a | Panel Earthing | Earthing provision to be provided on both sides with 50 mm extension of main Earth Bus Bar. | | |
| 33 | Clearance between live parts | Phase - phase -Minimum 25 mm & Phase - earth - Minimum 20 mm | | |

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|-----|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | 34 | Distance between each fuse outlet | Centre to Centre - 150mm (Minimum) |
| | | 35 | Distance between fuse outlet & panel surface | 125 mm (Minimum) |
| | | 36 | Distance between 2 MCCBs | 80 mm (Minimum) |
| | | 37 | Distance between MCCB outlet & panel surface | 125 mm (Minimum) |
| | | 38 | Control terminals for CTs | Stud type with disconnecting facilities |
| | | 39 | Control terminals for Voltage & other circuits | Stud type |
| | | 40 | Illumination and Indicating Bulb | LED |
| | | 41 | Continuous rated operating voltage | 440 volt +/- 10% |
| | | 42 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute |
| | | 43 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger |
| | | 44 | Labels & name plates | As per Specifications |
| | | 45 | Surface preparation for painting | Sand blasting or 7 tank process |
| | | 46 | Painting | Sand blasting or 7 tank process. Light grey shade No 631 of IS-5 Powder coated epoxy paint min thickness 120 micron |
| | | 47 | Power Supply Socket | 5A/15A Plug point socket to be provided |
| | | 48 | Breaker Barrier | Breaker must have a metallic removable sheet from the front side which will act as a barrier between operator and the breaker. Provision must be given for breaker operation to be done through this barrier. |
| | | 49 | Branding Plate | All supplied Units shall be fitted with engraved metallic logo of Tata Power on the front side. The Tata Power Co Ltd to be mentioned below the logo with clear font and Dimension 12*12 Inches. * Refer Annexure 2 |
| | | 50 | Panel Dimensions (Min depth of 800 mm) | L X D X H |
| | | 51 | Numerical Relay | Ashida (ADR 241S) with 4 Element O/C & E/F protection |
| | | 52 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) |
| 5.0 | GENERAL CONSTRUCTION | 1) The feeder pillar frame shall be fabricated using suitable mild steel structural section or pressed and shaped Cold Rolled Closed Annealed (CRCA) sheet of | | |

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thickness 3 mm.

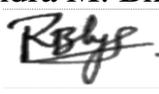
- 2) Frames shall be enclosed by CRCA sheet of thickness 3mm, smoothly finished, levelled and free from flaws. Doors and cover shall be made of CRCA sheet of thickness not less than 2.5mm. Stiffeners shall be provided, wherever necessary. Gland plates shall be of Hot Rolled Closed Annealed (HRCA) thickness not less than 3 mm. alternatively gland can also be provided between two angles so that removal of gland is easy. The dimension of base frame should be 75mm X 40mm X 5 mm.
- 3) The panel shall be of metal enclosed and outdoor type, support frame mounted type with canopy of adequate slope to avoid water accumulation. Degree of protection shall be IP 54.
- 4) Breaker compartment and fuse compartment should be separated by metallic sheet; the same should be split suitably in order to avoid local heating due to eddy currents generated by three phase bus bars crossing through the same sheet. The breaker compartment should be in center of panel & Outgoings shall be on both the sides of breaker compartment.
- 5) The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on sides and top portion. The louvers shall have fine wire mesh made of brass. The minimum depth of panel shall be 800 mm.
- 6) Labels on the front and rear indicating the panel designation, phase marking and danger signs shall be provided. Single Line Diagram & feeder details shall be engraved and pasted on inside of panel.
- 7) Danger boards shall be provided in local languages on the Hylam sheet below breaker and on front & rear cover with red background and with white letters.
- 8) Hinged doors of lift off type, with concealed type with brass type hinges and captive screws shall be provided on the front side & Back side. Adequate numbers of door hinges shall be provided and should be durable and easy in operation. All doors shall be provided with padlocking facility. The design of doors should permit inter-changeability. The back-side doors shall have nut and bolt arrangement. All Hinged doors shall be connected to the earth terminal with 2.5 Sq.mm braided copper wires.
- 9) Cable entry facilities at bottom of panel and removable gland plates of size suitable to accommodate incoming & outgoing cables of sizes, 4 Core 300 Sq mm 1.1 KV XLPE Cable, shall be provided at required locations.
- 10) Distance between Gland plate and cable termination of Air Circuit Breaker should be minimum 600mm.
- 11) The panel shall be provided with gasket all around the perimeter of covers, gland plates, removable covers and doors.
- 12) ACB termination shall be with tinned copper or tinned aluminium Bus Bar. Wherever required bimetallic washer to be provide, if bare copper terminal is provided.
- 13) Busbars shall be of aluminium with Bakelite shrouding, rated for 3200 A, 50 kA for 1 sec and shall have adequate cross section to carry the rated continuous and short time

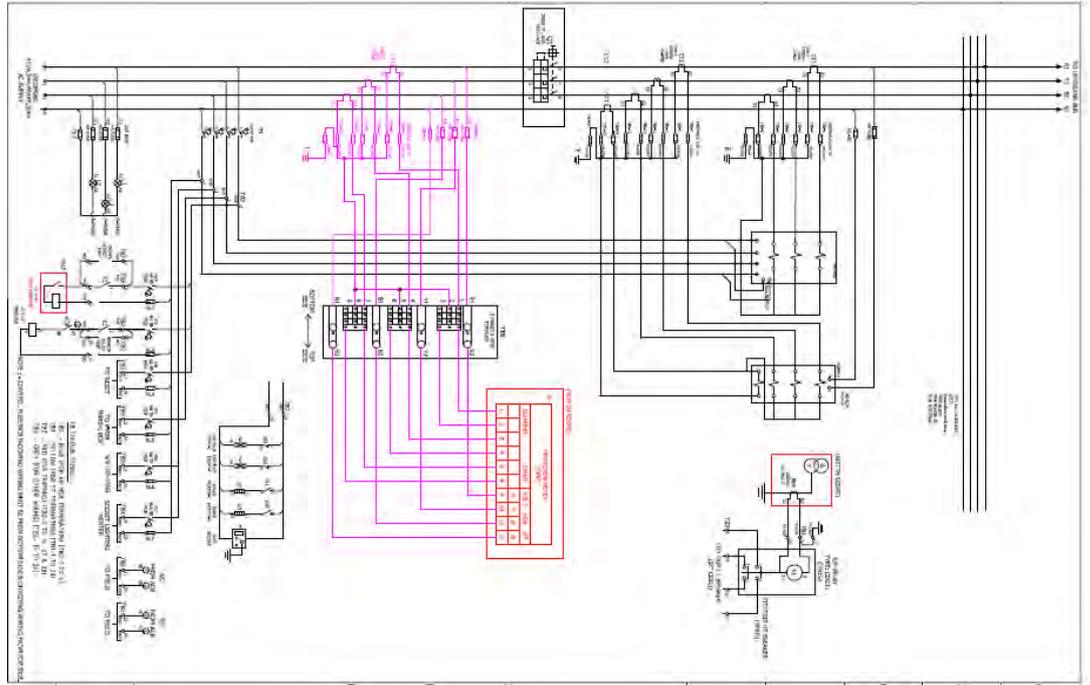
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current. Main Bus bar should be continuous/ without any joint. All bus bars, bus taps and joints shall be PVC taped. Neutral bus bar shall be provided on read side & rated for full bus bar rating.

- 14) The ACBs shall be mechanical operated fixed type 3 Pole with shunt trip coil without any microprocessor protection release. Ashida make (ADR41S) relay to be provided for tripping the breaker with Overcurrent & earth fault protection. Spare ACB contacts for shunt trip should be provided.**
- 15) All fuses shall be of the HRC cartridge type mounted on plug-in type fuse bases having a prospective current of not less than 80 kA.
- 16) MCCB shall be with Micro Processor Based Release having LSIG Protections. The MCCB shall have Spreader Links & Phase Barriers,
- 17) Phase to phase clearance of 25mm and Phase to Neutral / Earth clearance of 20mm shall be provided in the panel.
- 18) Distance between centre to centre should be minimum 150mm between each fuse outlet and 125mm between fuse outlet and body of panel to be maintained. Distance between 2 no's MCCB shall be minimum 80 mm, & between MCCB outlet & panel body shall be minimum 125 mm.
- 19) The panel shall be provided with two separate earthing terminals connected to earth bus.
- 20) All instruments shall be connected to the earth terminal using 650V grade PVC insulated 2.5 sq mm stranded tinned copper earthing conductor. All Earthing should be routed properly along with body of panel.
- 21) All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of braided copper conductors of adequate size. Flat earth bus should be protruded out for connection of external earth.
- 22) Eyebolt of suitable sizes shall be provided for lifting arrangements.
- 23) All wiring shall be carried out with 650V grade PVC insulated stranded copper conductors of adequate sizes to suit the rated circuit current.
- 24) The panel shall be powder coated with light shade grade no 631 of IS 5.
- 25) Required number of foundation bolts shall be supplied with the panel.
- 26) Control fuses with control terminals for external cable connections shall be in the breaker chamber only.
- 27) The control terminals shall be as follows:
- Stud type with disconnecting facilities for CT circuits
 - Stud type for voltage and other circuits.
- 28) Fuse bases shall have adequate contact surface with the bus bars provided to ensure that no local heating takes place.
- 29) Lighting System in Feeder Pillar should be LED based.

LT Panel: Representative GA drawing & SLD-

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5.1

Specific Requirements

- a) The LT Panel should be 6 Nos. outlets per phase respectively as per tender requirement.
- b) Material Quality Plan, general arrangement drawing and single line diagram of the feeder pillar to be approved before manufacturing.
- c) Adequate cable termination shall be provided as follows

| Sr. No. | TYPE | UoM | No. of Cable | Description |
|---------|---------------------|--------------------|--------------|------------------------------------------------------|
| 1 | 3200A Incomers | 1No. | 10 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 2 | 1000 A MCCB 3P | 2 no. Per outgoing | 4 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 3 | 800 A Fuse Outgoing | 2 No. Per outgoing | 3 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 4 | 630 A Fuse Outgoing | 2 No. Per outgoing | 2 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |

- d) 3200A Incomer shall be provided with resin cast CTs of ratio 3200/5A for metering & protection.
3 no's dual core CT 3200A/5A, Core 1: 0.5 Cl, Core 2: 5P20, 15 VA, to be used for

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| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

MFM.

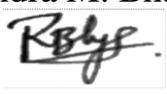
3 no's single core CT 3200A/5A, 0.5, 15 VA, to be used for Energy metering.

1 no single core CT 3200A/5A, 5P20, 15 VA, to be used for neutral unbalance protection.

- e) All CT termination should be round plug type. No CT shorting arrangement to be provided. (As per SLD)
- f) Secondary wiring shall be carried out with 1.1KV grade PVC insulated stranded copper conductor of 2.5 Sq. mm for CT circuits and 2.5 Sq. mm for PT and other circuits. All wires will be colour coded.

| Sr. No. | Equipment | Colour | Nomenclature of TBs | Types of TBs |
|---------|-------------------------------|---------|---------------------|--------------|
| 1. | TBs of 4 Pole MCB Termination | Blue | TB2 | Droppable |
| 2. | TBs for CT Termination | Yellow | TB1 | Droppable |
| 3. | TBs for Tripping | Red | TB2 | Droppable |
| 4. | All others | Default | TB2 | Normal |

- g) The feeder pillar panel shall be provided with Alstom Make CDG11 self-powered relay for earth fault protection. The relay type is normal inverse with 3 sec with E/F setting of 0.5 to 2 A.
- h) Test terminal box for Energy Metering should be Front Connection, Screw Type (4SF), 50 A to be provided and the convention of the wiring in the TTB should be Incoming from the bottom side and outgoing to Meter from top side. There must not be any partition between Relay & metering box in LV compartment. It should be single door compartment. No lugs shall be provided for wires to meter, TTB, and Fuses (PT secondary). Sealing arrangement to be provided for Energy Meters. Inspection glass (Transparent Toughened Glass) to be provided for viewing of meter.
- i) All Protection/ control wiring must terminate in LV compartment.
- j) Provision to be provided for mounting the energy meter with max dimensions as L x B x D: 360 x 200 x 200 mm (Energy meter will be supplied by TPC). The relay and energy meter shall be installed in the breaker compartment with suitable partitions. The relays shall be supplied by the vendor.
- k) The LT panel shall be equipped with shrouded type anti condensation space heaters with thermostat, internal light with switch & 5A/15A metal clad general-purpose plug socket.
- l) The following separate control circuit 20A, 4 pole MCB duly wired up to terminal block for purchaser's use shall be provided before the circuit breaker in feeder pillars leading to following single pole MCB with neutral links (refer SLD):

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Phase and neutral for 230V supply to RMU. (6A)
 Phase and neutral for 230V supply to Transformer marshalling box. (6A)
 Phase and neutral for external shunt trip coil (6A)
 Phase and neutral for FPI reset (6A)
 Separate 16A, DP MCB duly wired for Auxiliary supply for LT panel for following purpose,
 Phase and neutral for substation lighting (6A)
 Phase and neutral for Socket (15A)/ Heater circuit
 Phase and neutral for Ashida overcurrent relay (4A)

m) The following separate control fuses with neutral links duly wired out to a set of stud type link terminals for purchaser's use shall be provided before the circuit breaker in feeder pillars Control fuse Incoming wiring must be from bottom side & Outgoing wiring from top side. (refer SLD):

Three phase and neutral for metering circuit.
 Three Phase and neutral for indication lamp

n) Locking should be of welded type. Earthing jumpers to be provided for all the doors. Louvers with stainless steel wire mesh to be provided on body side and cover plate.

o) Makes of various bought out items shall be limited to the following:

| Sr. No. | Items | Approved Make |
|---------|-------|------------------------------------------|
| 1 | ACB | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton |
| 2. | CT | Reco/Newtek/Pragati/Kappa/ECS/Adcon |

p) Flexible copper braiding should be provided on the doors. Neutral bus shall be connected with earth bus. All control cable should be multi stranded and FRLS. CT ISF should be less than or equal to 5. Close and Open status of the breaker should be available on SCADA through spare auxiliary contact and on LT panel through LED Lamp.

q) The fuses provide should be of knife type and same should be removable with the help of fuse puller. There shall be no obstruction during removal of outgoing fuses by fuse puller.

r) The safety locking facility to be provided for putting three nos. of safety locks.

s) Panel minimum width in mm: 800 mm

t) The breaker manufacturer to provide the complete support in terms of training; hand holding to our Testing and O&M staff. The breaker manufacturer to give the support service for next 10 years.

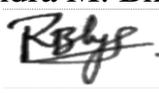
u) The robust isolating arrangement in the OG fuse compartment to be made.

6.0

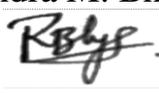
NAME PLATE AND MARKING

6.1 Name plate- On front door top left side-showing

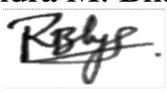
- 1) Purchaser name & PO number.
- 2) Manufacturer name
- 3) Month / year of manufacturing
- 4) 'Property of Tata Power'

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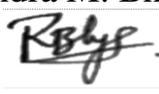
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| | | <p>6.2 Marking for panel earth stud- Black letter 'E', on riveted Al label</p> <p>6.3 Danger board in English & local language, riveted on doors- White colour background with red lettering on 1.6mm thick Al plate.</p> <p>6.4 SLD shall be engraved & pasted on inside of door.</p> <p>6.5 CT Serial Nos., Ratio & ACB Serial Nos. to be written on doors with marker pen.</p> <p>6.6 Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown in Annexure-2.</p> |
| 7.0 | TESTS | <p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Feeder Pillar' in addition to others specified in IS/IEC standards.</p> <p>*In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid</p> |
| 7.1 | Type test | <p>Type test - Only type tested components – ACBs, Fuses, Insulators & aluminium bus bar shall be accepted. Following type test shall be carried out on the assembly.</p> <p>a) Verification of temperature-rise limits – Clause 8.2.1 of IS 8623 b) Verification of dielectric properties – Clause 8.2.2 of IS 8623 c) Verification of short-circuits strength – Clause 8.2.3 of IS 8623 d) Verification of continuity of the protective circuit – Clause 8.2.4 of IS 8623 e) Verification of clearance and creepage distances – Clause 8.2.5 of IS 8623 f) Verification of mechanical operation – Clause 8.2.6 of IS 8623 f) Verification of degree of protection – Clause 8.2.7 of IS 8623</p> |
| 7.2 | Routine test | <p>Acceptance & routine test- (Inspection test witness by purchaser as per approved Quality Assurance Plan)</p> <p>1) Visual inspection, dimension checks & paint thickness checks. 2) Bill of material check 3) Insulation resistance test 4) High voltage test 5) Operational check 6) Verification of dielectric properties 7) Tolerances on panel dimensions- Maximum +/- 5mm 8) No negative tolerance on bus bar dimensions & bus bar clearances 9) Stability test shall be conducted on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> |
| 7.3 | Acceptance test | <p>1) Visual inspection & dimensional check 2) Verification of clearance and creepage distance 3) Paint thickness check 4) Wiring checks 5) Insulation resistance test 6) HV test 7) Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> |

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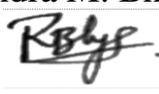
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| | | 8) 1 unit from 1st lot shall be tested for Temperature rise test with ACB, MCCB and fuses. (Bidder to arrange for the same, either in factory or in external lab) |
| 8.0 | TYPE TEST CERTIFICATE | <p>The Bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. Type Test to be conducted on similar Design/ rating panel. All the tests shall be conducted at CPRI / ERDA/ NABL as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 10 years from the date of opening the bid.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> |
| 9.0 | PRE-DISPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY `s representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection.</p> <p>Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY.</p> <p>Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> Test reports MDCC issued by TATA POWER COMPANY Invoice in duplicate Packing list Drawings & catalogue Delivery Challan Other Documents (as applicable). |
| 10.0 | INSPECTION AFTER RECEIPT AT STORE | <p>The material received at TPC, Mumbai store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection or any other parameters observed after delivery.</p> <p>The material should be delivered at TPC, Mumbai stores within 45 days from the date of manufacturing, same shall be checked during delivery and overdue material shall not be accepted. Bidders to plan the delivery accordingly.</p> <p>Bidders to attend and rectify the same at his own cost. The material shall be accepted in stores only after rectification of any observed flaw. The delay in rectification shall lead to any contractual penalty.</p> |

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| | | Billing shall be processed only after acceptance of the material. |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract.</p> <p>In the event any defect is found by the TATA POWER COMPANY up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements) Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the TATA POWER COMPANY will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit.</p> <ol style="list-style-type: none"> 1) Packing protection- Against shocks, vibration & corrosion, damages during transportation 2) Packing identification labels, to show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number 3) Handling instruction- To be marked on packing boxes. 4) Bidders should prefer to use recyclable & environmentally friendly materials for packing. 5) No single use plastic to be used. 6) Packing should be done with environment friendly recyclable materials. |
| 13.0 | TENDER SAMPLE | Not Applicable |
| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> <p>TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections.</p> |

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| | | If anything missing in QAP and required as per other clauses of this document, bidder is liable to perform the same without cost implication. | | | | | | |
|--------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|------------------------------------------|--|--|--|
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards and as specified above. | | | | | | |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). | | | | | | |
| 17.0 | SPARES, ACCESSORIES, AND TOOLS | Keys of door | | | | | | |
| 18.0 | DRAWING AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid. All the documents & drawings shall be in English language</p> <p>a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates g) Any other technical document, if required</p> | | | | | | |
| 19.0 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS | Bidders to comply for all above requirement of specifications clauses & submit signed and stamp copy as technical compliance document. | | | | | | |
| 20.0 | SCHEDULE "B" DEVIATIONS | <p>The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications.</p> <p>(TO BE ENCLOSED WITH THE BID)</p> <p>All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:</p> <table border="1"> <thead> <tr> <th>Sr.No.</th> <th>Clause No.</th> <th>Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> | Sr.No. | Clause No. | Details of deviation with justifications | | | |
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We confirm that there are no deviations apart from those detailed above.

Seal of the Company

Signature :

Designation :

Annexure – 1

Inspection Testing Plan

1. Visual inspection & dimensional check
2. Verification of clearance and creepage distance
3. Paint thickness check
4. Wiring checks
5. Insulation resistance test
6. HV test
7. Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function
8. 1 unit from 1st lot shall be tested for Temperature rise test with ACB, MCCB and fuses. (Bidder to arrange for the same, either in factory or in external lab)

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Annexure – 2

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.

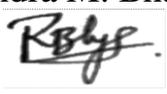


Centre aligned - Stacked (Preferred)



Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

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| | | |
|--------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------|
| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 3200 A LT Panel with MCCB & Fuse |
| ENSE-DS-2029-R01 | | Date of Issue: 25/02/25 |

Annexure – 3

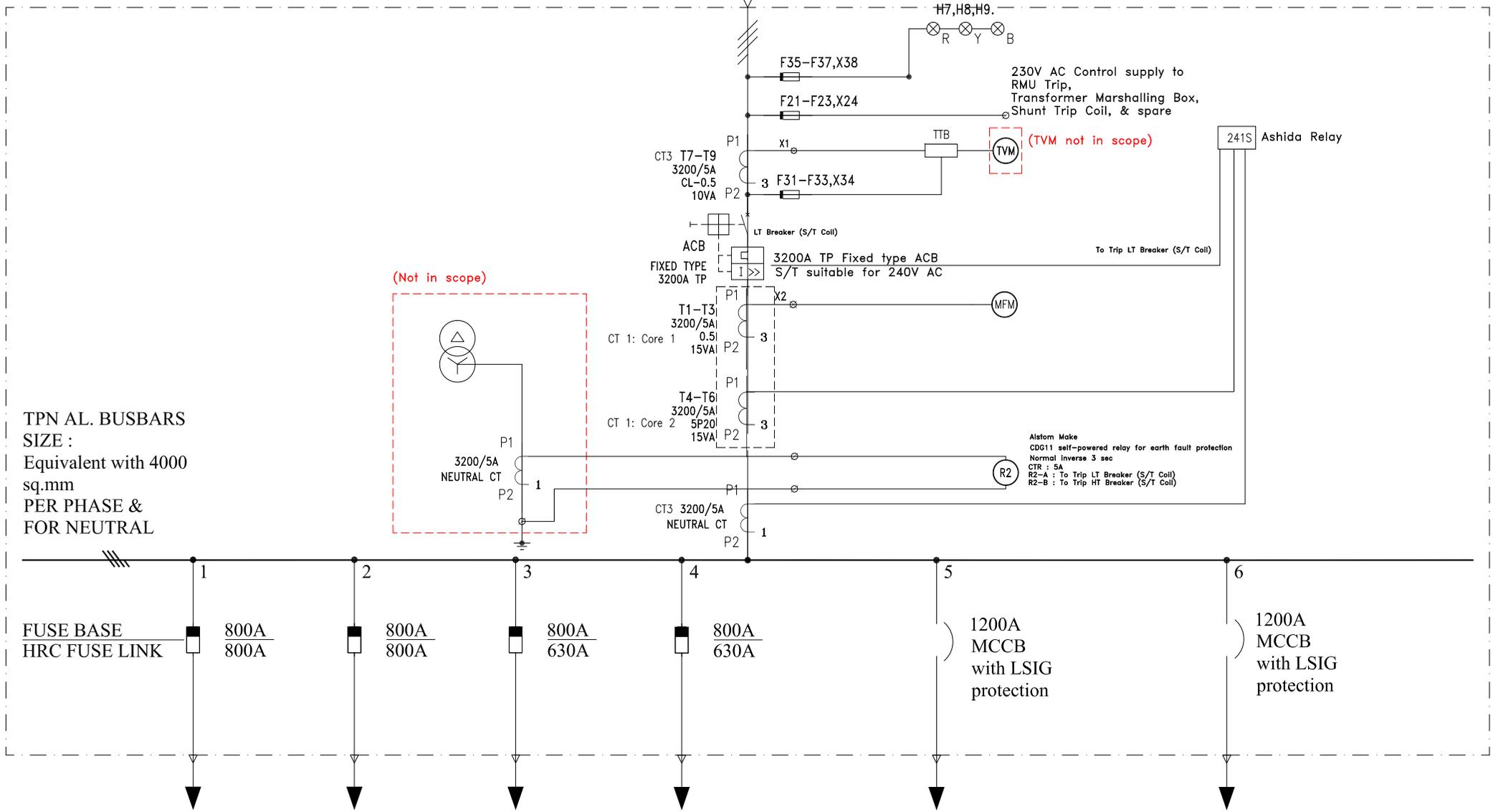
Reference drawings

TATA POWER

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INCOMING SUPPLY
415V AC, TPN

10 Nos 4c X 300sq.mm AL Cond. Armoured XLPE / PVC Cable.



(Not in scope)

(TVM not in scope)

Alstom Make
ODG11 self-powered relay for earth fault protection
Normal Inverse 3 sec
CTR : 5A
R2-A : To Trip LT Breaker (S/T Coil)
R2-B : To Trip HT Breaker (S/T Coil)

TPN AL. BUSBARS
SIZE :
Equivalent with 4000
sq.mm
PER PHASE &
FOR NEUTRAL

TECHNICAL SPECIFICATION

2500 A LT Panel with MCCB & Fuse

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra

TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2028-R01

Document Title: Technical SPECIFICATION OF 2500 A LT Panels with MCCB & Fuse

| R01 | ENSE-DS-2028-R01 | 25/02/2025 | YMM |  | AVP |  | RMB |  |
|---------|------------------|------------|-------------|-----------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------|
| R00 | ENSE-DS-2028-R00 | 11/01/2024 | YMM |  | AVP |  | RMB |  |
| R0 | D-NPCE-SPEC-07 | 21/08/2019 | ND | -sd- | NK | -sd- | NCP | -sd- |
| Rev No. | Remarks | Date | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | Prepared By | | Reviewed By | | Approved & Issued By | |

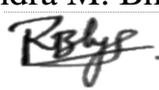
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| | 11/01/2024 | 11/01/2024 | 11/01/2024 |

| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V, 2500 A LT Panel with 2 no's 3P 1000 A MCCB & 3 nos 800 A HRC Fuse Outgoing Feeders complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the purchaser (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2.0 | APPLICABLE STANDARDS | <p>The equipment shall conform to this specification and latest revision of following codes with all amendments.</p> <table border="1" data-bbox="427 891 1481 1653"> <thead> <tr> <th></th> <th>Title</th> <th>Indian standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>IS 8623</td> <td>Specification for low voltage switchgear</td> </tr> <tr> <td>2</td> <td>IS 12063/ IEC 60529</td> <td>Classification of degrees of protection provided by Enclosures of Electrical equipment</td> </tr> <tr> <td>3</td> <td>IS 5</td> <td>Color of ready mixed paints</td> </tr> <tr> <td>4</td> <td>IS 5082</td> <td>Wrought Aluminium & Al alloy plates & sheets for electrical application</td> </tr> <tr> <td>5</td> <td>IS 2705</td> <td>Current Transformers</td> </tr> <tr> <td>6</td> <td>IS 2551</td> <td>Danger Notice plates</td> </tr> <tr> <td>7</td> <td>IS 13703-2</td> <td>Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons</td> </tr> <tr> <td>8</td> <td>IEC 255</td> <td>Protection Relays</td> </tr> <tr> <td>9</td> <td>IEC 801</td> <td>Control and monitoring</td> </tr> <tr> <td>10</td> <td>IEC 60947-2 /IS 13947-2</td> <td>Low Voltage Switchgear & control gear</td> </tr> <tr> <td>11</td> <td>IEC 60269</td> <td>Low Voltage Fuses</td> </tr> </tbody> </table> <p>In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</p> | | Title | Indian standard | 1 | IS 8623 | Specification for low voltage switchgear | 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | 3 | IS 5 | Color of ready mixed paints | 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | 5 | IS 2705 | Current Transformers | 6 | IS 2551 | Danger Notice plates | 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | 8 | IEC 255 | Protection Relays | 9 | IEC 801 | Control and monitoring | 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | 11 | IEC 60269 | Low Voltage Fuses |
| | Title | Indian standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | IS 8623 | Specification for low voltage switchgear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | IS 5 | Color of ready mixed paints | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 11 | IEC 60269 | Low Voltage Fuses | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | CLIMATIC CONDITIONS OF THE | <table border="1" data-bbox="443 1832 1449 1863"> <tr> <td>1</td> <td>Maximum ambient temperature</td> <td>43 deg.C</td> </tr> </table> | 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | 25/02/25 | 25/02/25 | 25/02/25 |

INSTALLATION

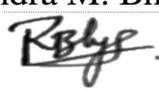
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| 2 | Max. Daily average ambient temp | 35 deg.C |
| 3 | Min Ambient Temperature | 07 deg.C |
| 4 | Maximum Relative Humidity | 100% |
| 5 | Minimum Relative Humidity | 40% |
| 6 | Average No. of thunderstorm per annum | 50 |
| 7 | Average Annual Rainfall | 2380mm |
| 8 | Average No. of rainy days per annum | 115 |
| 9 | Rainy months | June to Oct. |
| 10 | Altitude above MSL not exceeding | 300 meters |
| 11 | Average Air Pressure | 29.6-inch Hg |

Atmosphere is generally laden with mild acid and dust suspended during dry months and subjected to fog in cold months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.

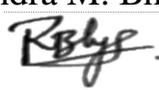
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GENERAL TECHNICAL REQUIREMENTS

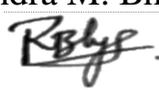
| Sr. No | Item Description | Tata Power Requirement |
|--------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1 | Manufacturer | Name |
| | | Manufacturer Address |
| | | Contact telephone no |
| 2 | Breaker Rating (ACB) | 2500A Manual Fixed Type without any microprocessor relay. 230V AC Shunt tripping coil to be provided. |
| | Model of ACB | The Model shall be such that current density in current carrying part shall be less than 3 A/sq.mm. (Bidder to mention the model) |
| | Approved Make | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton |
| 3 | Main bus bar rating | 2500 A |
| | Bus bar Size for Phase & Neutral | 3600 sq.mm for Phase & Neutral |
| | Earth Bus | 1 x 50 x 10 mm GI |
| 4 | Type of Installation | Indoor/Outdoor Type |
| 5 | No of Incoming feeders | Qty -1no. of 2500A ACB with 8 Nos of 4CX300 sq.mm Al Ar XLPE cables |
| 6 | No of outgoing feeders – 1000 A MCCB | Quantity - 2 Nos of 1000A each with 4 no's of 4CX300 sq.mm Al Ar XLPE cables per O/G |
| | No of outgoing feeders – HRC Fuse | Quantity - 3 Nos of 800A each With 3 no's of 4CX300 sq.mm Al Ar XLPE cables per O/G |

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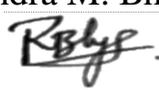
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| | | 7 | Panel construction | CRCA sheet steel of thickness 3 mm |
| | | 8 | Panel enclosure class | IP54 - ingress protection |
| | | 9 | Sheet steel thickness | Doors & Covers - 2.5mm, FRAME - 3mm |
| | | 10 | Door type for front & rear access | Double door with rear door bolted |
| | | 11 | Door hinges | Minimum three anti-theft type hinges self-locking type |
| | | 12 | Padlocking facility | For front door |
| | | 13 | Master key for all doors | Identical for all panels, 1 no./ panel to be provided |
| | | 14 | Hardware & Fasteners | All Nuts, Bolts, Washers shall be Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. Bolts below 12 mm size shall be SS material. |
| | | 14a | Current Carrying part hardware | Each bolt on Bus Bar and Fuse terminal shall be provided with Belleville washer and plain washer. Wherever required bimetallic washers to be provided |
| | | 15 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 |
| | | | Bus bar size in mm for 2500 A O/G | 3600 sq.mm for Phase & Neutral |
| | | | 2500A ACB Incoming | 3600 sq.mm for Phase & Neutral |
| | | | ACB O/G LINKS | 3600 sq.mm for Phase & Neutral (Dimensions as per feasibility with Breaker palm connection) |
| | | 16 | Bus bar colour coding for R, Y, B & neutral | Heat shrinkable sleeves with colour Red, Yellow, Blue & Black respectively |
| | | 16 a | Bus Bar Heat shrinkable sleeves | Cross-linked Polyolefin (Bidder to specify thickness) |
| | | 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec |
| | | 18 | Permissible maximum temperature rise above ambient of 50°C | Busbar: 45 deg C |
| | | | Permissible maximum temperature rise above ambient of 50°C | Terminals: 65 deg C |
| | | 19 | Bus bar support insulators | As per IS13410 SMC / DMC, 1100V grade |
| | | 20 | Incoming Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | | 21 | Outgoing Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | | 22 | Gland plate at panel bottom | HRCA MS 3mm thickness |

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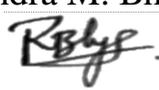
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| | | 23 | Cable termination clearance | 600 mm minimum from gland plate & ACB |
| | | 24 | Fuse Base | 800 A |
| | | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Bussmann / ABB |
| | | 25 | Fuses (800 A) | HRC plug-in type gG (General Purpose, Fast acting fuse) |
| | | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Bussmann / ABB |
| | | 26 | 1000 A MCCB 3P | MCCB shall be with Micro Processor Based Release having LSIG Protections. The MCCB shall have Spreader Links & Phase Barriers. |
| | | | | Approved Make - Schneider/L&T/ABB/Siemens/Eaton |
| | | 27 | CT's for 2500A Incoming Feeder | 7 Nos. Single resin cast. a) 3 no's dual core CT's of ratio 2500/5A <ul style="list-style-type: none"> • Core 1: Class 0.5 & 15VA burden – For MFM • Core 2: 5P20 & 15VA – For Ashida make O/C+E/F relay |
| | | | | b) 3 no's single core CTs of ratio 2500/5 A, Class 0.5 & 15 VA for Energy meter (Energy meter is not in bidder scope) c) 1 no single core CT of ratio 2500/5A, 5P20 & 15 VA for Neutral unbalance protection Approved Make of CTs: Reco/Newtek/Pragati/Kappa/ECS/Adcon |
| | | 28 | TTB for Metering | Front connection, Screw Type 3 Phase 4 Wire, 4SF, 50 A, DAV/IMP make |
| | | 29 | Wiring convention for TTB | Incoming from Bottom Side & Outgoing to Meter from Top side |
| | | 30 | Multifunction Digital meter | Should be communicable on Modbus RS 485 |
| 31 | Earth Fault protection relay (NEF) | Alstom make CDG11 self-powered. Relay type is normal inverse with 3 Sec with E/F setting of 0.5 to 2 A | | |
| 32 | Earthing Hardware | a) Earthing Nut and Bolt shall be M12 SS b) Washers shall be with Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. | | |
| | | Earthing provision to be provided on both sides with 50 mm extension of main Earth Bus Bar. | | |
| 32a | Panel Earthing | | | |

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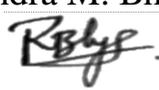
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| | | 33 | Clearance between live parts | Phase - phase -Minimum 25 mm & Phase - earth - Minimum 20 mm |
| | | 34 | Distance between each fuse outlet | Centre to Centre - 150mm (Minimum) |
| | | 35 | Distance between fuse outlet & panel surface | 125 mm (Minimum) |
| | | 36 | Distance between 2 MCCBs | 80 mm (Minimum) |
| | | 37 | Distance between MCCB outlet & panel surface | 125 mm (Minimum) |
| | | 38 | Control terminals for CTs | Stud type with disconnecting facilities |
| | | 39 | Control terminals for Voltage & other circuits | Stud type |
| | | 40 | Illumination and Indicating Bulb | LED |
| | | 41 | Continuous rated operating voltage | 440 volt +/- 10% |
| | | 42 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute |
| | | 43 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger |
| | | 44 | Labels & name plates | As per Specifications |
| | | 45 | Surface preparation for painting | Sand blasting or 7 tank process |
| | | 46 | Painting | Sand blasting or 7 tank process. Light grey shade No 631 of IS-5 Powder coated epoxy paint min thickness 120 micron |
| | | 47 | Power Supply Socket | 5A/15A Plug point socket to be provided |
| | | 48 | Breaker Barrier | Breaker must have a metallic removable sheet from the front side which will act as a barrier between operator and the breaker. Provision must be given for breaker operation to be done through this barrier. |
| | | 49 | Branding Plate | All supplied Units shall be fitted with engraved metallic logo of Tata Power on the front side. The Tata Power Co Ltd to be mentioned below the logo with clear font and Dimension 12*12 Inches. * Refer Annexure 2 |
| | | 50 | Panel Dimensions (Min depth of 800 mm) | L X D X H |
| | | 51 | Numerical Relay | Ashida (ADR 241S) with 4 Element O/C and E/F Protection. |
| | | 52 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between |

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| | | | bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) |
| 5.0 | GENERAL CONSTRUCTION | <ol style="list-style-type: none"> 1) The feeder pillar frame shall be fabricated using suitable mild steel structural section or pressed and shaped Cold Rolled Closed Annealed (CRCA) sheet of thickness 3 mm. 2) Frames shall be enclosed by CRCA sheet of thickness 3mm, smoothly finished, levelled and free from flaws. Doors and cover shall be made of CRCA sheet of thickness not less than 2.5mm. Stiffeners shall be provided, wherever necessary. Gland plates shall be of Hot Rolled Closed Annealed (HRCA) thickness not less than 3 mm. alternatively gland can also be provided between two angles so that removal of gland is easy. The dimension of base frame should be 75mm X 40mm X 5 mm. 3) The panel shall be of metal enclosed and outdoor type, support frame mounted type with canopy of adequate slope to avoid water accumulation. Degree of protection shall be IP 54. 4) Breaker compartment and fuse compartment should be separated by metallic sheet; the same should be split suitably in order to avoid local heating due to eddy currents generated by three phase bus bars crossing through the same sheet. The breaker compartment should be in center of panel & Outgoings shall be on both the sides of breaker compartment. 5) The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on sides and top portion. The louvers shall have fine wire mesh made of brass. The minimum depth of panel shall be 800 mm. 6) Labels on the front and rear indicating the panel designation, phase marking and danger signs shall be provided. Single Line Diagram & feeder details shall be engraved and pasted on inside of panel. 7) Danger boards shall be provided in local languages on the Hylam sheet below breaker and on front & rear cover with red background and with white letters. 8) Hinged doors of lift off type, with concealed type with brass type hinges and captive screws shall be provided on the front side & Back side. Adequate numbers of door hinges shall be provided and should be durable and easy in operation. All doors shall be provided with padlocking facility. The design of doors should permit inter-changeability. The back-side doors shall have nut and bolt arrangement. All Hinged doors shall be connected to the earth terminal with 2.5 Sq.mm braided copper wires. 9) Cable entry facilities at bottom of panel and removable gland plates of size suitable to accommodate incoming & outgoing cables of sizes, 4 Core 300 Sq mm 1.1 KV XLPE Cable, shall be provided at required locations. 10) Distance between Gland plate and cable termination of Air Circuit Breaker should be minimum 600mm. 11) The panel shall be provided with gasket all around the perimeter of covers, gland plates, removable covers and doors. | |

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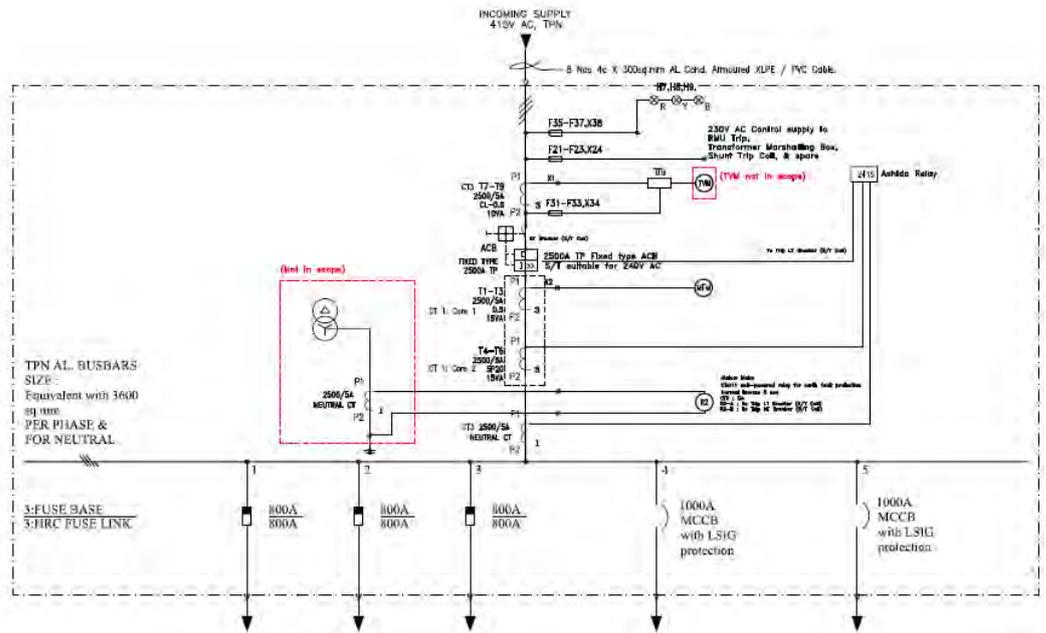
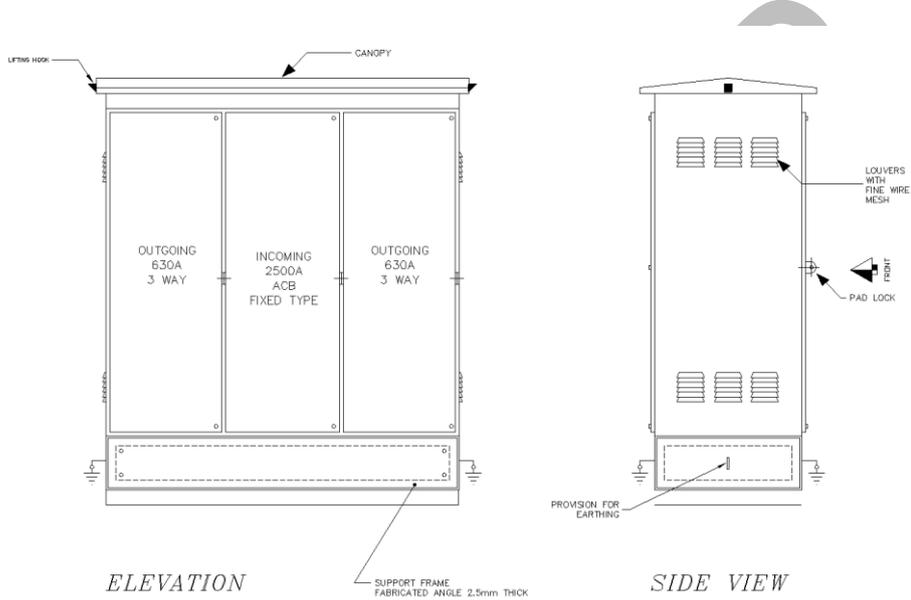
- 12) ACB termination shall be with tinned copper or tinned aluminium Bus Bar. Wherever required bimetallic washer to be provide, if bare copper terminal is provided.
- 13) Busbars shall be of aluminium with Bakelite shrouding, rated for 2500A, 50 kA for 1 sec and shall have adequate cross section to carry the rated continuous and short time current. Main Bus bar should be continuous/ without any joint. All bus bars, bus taps and joints shall be PVC taped. Neutral bus bar shall be provided on read side & rated for full bus bar rating.
- 14) The ACBs shall be mechanical operated fixed type 3 Pole with shunt trip coil without any microprocessor protection release. Ashida make (ADR41S) relay to be provided for tripping the breaker with Overcurrent & earth fault protection. Spare ACB contacts for shunt trip should be provided.**
- 15) All fuses shall be of the HRC cartridge type mounted on plug-in type fuse bases having a prospective current of not less than 80 kA.
- 16) MCCB shall be with Micro Processor Based Release having LSIG Protections. The MCCB shall have Spreader Links & Phase Barriers,
- 17) Phase to phase clearance of 25mm and Phase to Neutral / Earth clearance of 20mm shall be provided in the panel.
- 18) Distance between centre to centre should be minimum 150mm between each fuse outlet and 125mm between fuse outlet and body of panel to be maintained. Distance between 2 no's MCCB shall be minimum 80 mm, & between MCCB outlet & panel body shall be minimum 125 mm.
- 19) The panel shall be provided with two separate earthing terminals connected to earth bus.
- 20) All instruments shall be connected to the earth terminal using 650V grade PVC insulated 2.5 sq mm stranded tinned copper earthing conductor. All Earthing should be routed properly along with body of panel.
- 21) All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of braided copper conductors of adequate size. Flat earth bus should be protruded out for connection of external earth.
- 22) Eyebolt of suitable sizes shall be provided for lifting arrangements.
- 23) All wiring shall be carried out with 650V grade PVC insulated stranded copper conductors of adequate sizes to suit the rated circuit current.
- 24) The panel shall be powder coated with light shade grade no 631 of IS 5.
- 25) Required number of foundation bolts shall be supplied with the panel.
- 26) Control fuses with control terminals for external cable connections shall be in the breaker chamber only.
- 27) The control terminals shall be as follows:
Stud type with disconnecting facilities for CT circuits
Stud type for voltage and other circuits.

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28) Fuse bases shall have adequate contact surface with the bus bars provided to ensure that no local heating takes place.

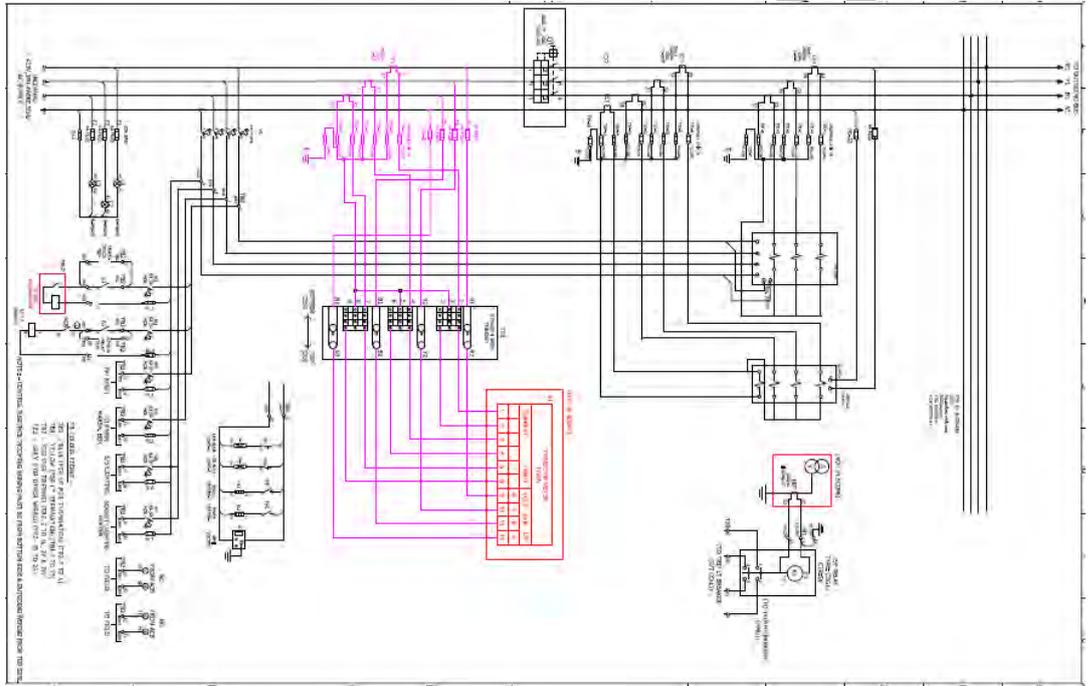
29) Lighting System in Feeder Pillar should be LED based.

LT Panel: Representative GA drawing & SLD-



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Control Wiring Diagram:



5.1

Specific Requirements

- a) The LT Panel should be 5 Nos. outlets per phase respectively as per tender requirement.
- b) Material Quality Plan, general arrangement drawing and single line diagram of the feeder pillar to be approved before manufacturing.
- c) Adequate cable termination shall be provided as follows

| Sr. No. | TYPE | UoM | No. of Cable | Description |
|---------|---------------------|--------------------|--------------|------------------------------------------------------|
| 1 | 2500A Incomers | 1No. | 8 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 2 | 800 A Fuse Outgoing | 3 No. Per outgoing | 3 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |

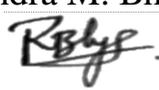
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|---|-------------------|-----------------------|---|------------------------------------------------------------|
| 3 | 1000 A MCCB 3P | 2 no. Per outgoing | 4 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
|---|-------------------|-----------------------|---|------------------------------------------------------------|

- d) 2500A Incomer shall be provided with resin cast CTs of ratio 2500/5A for metering & protection.
- 3 no's dual core CT 2500A/5A, Core 1: 0.5 CI, Core 2: 5P20, 15 VA, to be used for MFM.
- 3 no's single core CT 2500A/5A, 0.5, 15 VA, to be used for Energy metering.
- 1 no single core CT 2500A/5A, 5P20, 15 VA, to be used for neutral unbalance protection.
- e) All CT termination should be round plug type. No CT shorting arrangement to be provided. (As per SLD)
- f) Secondary wiring shall be carried out with 1.1KV grade PVC insulated stranded copper conductor of 2.5 Sq. mm for CT circuits and 2.5 Sq. mm for PT and other circuits. All wires will be colour coded.

| Sr. No. | Equipment | Colour | Nomenclature of TBs | Types of TBs |
|---------|-------------------------------|---------|---------------------|--------------|
| 1. | TBs of 4 Pole MCB Termination | Blue | TB2 | Droppable |
| 2. | TBs for CT Termination | Yellow | TB1 | Droppable |
| 3. | TBs for Tripping | Red | TB2 | Droppable |
| 4. | All others | Default | TB2 | Normal |

- g) The feeder pillar panel shall be provided with Alstom Make CDG11 self-powered relay for earth fault protection. The relay type is normal inverse with 3 sec with E/F setting of 0.5 to 2 A.
- h) Test terminal box for Energy Metering should be Front Connection, Screw Type (4SF), 50A to be provided and the convention of the wiring in the TTB should be Incoming from the bottom side and outgoing to Meter from top side. There must not be any partition between Relay & metering box in LV compartment. It should be single door compartment. No lugs shall be provided for wires to meter, TTB, and Fuses (PT secondary). Sealing arrangement to be provided for Energy Meters. Inspection glass (Transparent Toughened Glass) to be provided for viewing of meter.
- i) All Protection/ control wiring must terminate in LV compartment.
- j) Provision to be provided for mounting the energy meter with max dimensions as L x B x D: 360 x 200 x 200 mm (Energy meter will be supplied by TPC). The relay and energy meter shall be installed in the breaker compartment with suitable partitions. The relays shall be supplied by the vendor.

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k) The LT panel shall be equipped with shrouded type anti condensation space heaters with thermostat, internal light with switch & 5A/15A metal clad general-purpose plug socket.

l) The following separate control circuit 20A, 4 pole MCB duly wired up to terminal block for purchaser's use shall be provided before the circuit breaker in feeder pillars leading to following single pole MCB with neutral links (refer SLD):

Phase and neutral for 230V supply to RMU. (6A)

Phase and neutral for 230V supply to Transformer marshalling box. (6A)

Phase and neutral for external shunt trip coil (6A)

Phase and neutral for FPI reset (6A)

Separate 16A, DP MCB duly wired for Auxiliary supply for LT panel for following purpose,

Phase and neutral for substation lighting (6A)

Phase and neutral for Socket (15A)/ Heater circuit

Phase and neutral for Ashida overcurrent relay (4A)

m) The following separate control fuses with neutral links duly wired out to a set of stud type link terminals for purchaser's use shall be provided before the circuit breaker in feeder pillars Control fuse Incoming wiring must be from bottom side & Outgoing wiring from top side. (refer SLD):

Three phase and neutral for metering circuit.

Three Phase and neutral for indication lamp

n) Locking should be of welded type. Earthing jumpers to be provided for all the doors. Louvers with stainless steel wire mesh to be provided on body side and cover plate.

o) Makes of various bought out items shall be limited to the following:

| Sr. No. | Items | Approved Make |
|---------|-------|-------------------------------------|
| 1 | ACB | L&T/Siemens/Schneider/ABB/Eaton |
| 2. | CT | Reco/Newtek/Pragati/Kappa/ECS/Adcon |

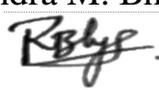
p) Flexible copper braiding should be provided on the doors. Neutral bus shall be connected with earth bus. All control cable should be multi stranded and FRLS. CT ISF should be less than or equal to 5. Close and Open status of the breaker should be available on SCADA through spare auxiliary contact and on LT panel through LED Lamp.

q) The fuses provide should be of knife type and same should be removable with the help of fuse puller. There shall be no obstruction during removal of outgoing fuses by fuse puller.

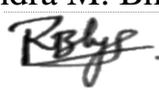
r) The safety locking facility to be provided for putting three nos. of safety locks.

s) Panel minimum width in mm: 800 mm

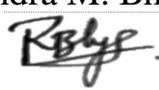
t) The breaker manufacturer to provide the complete support in terms of training; hand

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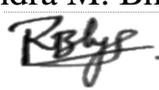
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| | | holding to our Testing and O&M staff. The breaker manufacturer to give the support service for next 10 years. u) The robust isolating arrangement in the OG fuse compartment to be made. |
| 6.0 | NAME PLATE AND MARKING | <p>6.1 Name plate- On front door top left side-showing 1) Purchaser name & PO number. 2) Manufacturer name 3) Month / year of manufacturing 4) 'Property of Tata Power'</p> <p>6.2 Marking for panel earth stud- Black letter 'E', on riveted Al label</p> <p>6.3 Danger board in English & local language, riveted on doors- White colour background with red lettering on 1.6mm thick Al plate.</p> <p>6.4 SLD shall be engraved & pasted on inside of door.</p> <p>6.5 CT Serial Nos., Ratio & ACB Serial Nos. to be written on doors with marker pen.</p> <p>6.6 Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown in Annexure-2.</p> |
| 7.0 | TESTS | <p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Feeder Pillar' in addition to others specified in IS/IEC standards.</p> <p>*In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid.</p> |
| 7.1 | Type test | <p>Type test - Only type tested components – ACBs, Fuses, Insulators & aluminium bus bar shall be accepted. Following type test shall be carried out on the assembly.</p> <p>a) Verification of temperature-rise limits – Clause 8.2.1 of IS 8623 b) Verification of dielectric properties – Clause 8.2.2 of IS 8623 c) Verification of short-circuits strength – Clause 8.2.3 of IS 8623 d) Verification of continuity of the protective circuit – Clause 8.2.4 of IS 8623 e) Verification of clearance and creepage distances – Clause 8.2.5 of IS 8623 f) Verification of mechanical operation – Clause 8.2.6 of IS 8623 f) Verification of degree of protection – Clause 8.2.7 of IS 8623</p> |
| 7.2 | Routine test | <p>Acceptance & routine test- (Inspection test witness by purchaser as per approved Quality Assurance Plan)</p> <p>1) Visual inspection, dimension checks & paint thickness checks. 2) Bill of material check 3) Insulation resistance test 4) High voltage test 5) Operational check 6) Verification of dielectric properties 7) Tolerances on panel dimensions- Maximum +/- 5mm</p> |

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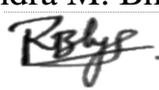
| | | |
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| | | <p>8) No negative tolerance on bus bar dimensions & bus bar clearances</p> <p>9) Stability test shall be conducted on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> |
| 7.3 | Acceptance test | <p>1) Visual inspection & dimensional check</p> <p>2) Verification of clearance and creepage distance</p> <p>3) Paint thickness check</p> <p>4) Wiring checks</p> <p>5) Insulation resistance test</p> <p>6) HV test</p> <p>7) Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> <p>8) 1 unit from 1st lot shall be tested for Temperature rise test with ACB, MCCB and fuses. (Bidder to arrange for the same, either in factory or in external lab)</p> |
| 8.0 | TYPE TEST CERTIFICATE | <p>The Bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. Type Test to be conducted on similar Design/ rating panel. All the tests shall be conducted at CPRI / ERDA/ NABL as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 10 years from the date of opening the bid.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> |
| 9.0 | PRE-DISPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY `s representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection.</p> <p>Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY.</p> <p>Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <p>a) Test reports</p> <p>b) MDCC issued by TATA POWER COMPANY</p> <p>c) Invoice in duplicate</p> <p>d) Packing list</p> <p>e) Drawings & catalogue</p> <p>f) Delivery Challan</p> |

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| | | g) Other Documents (as applicable). |
| 10.0 | INSPECTION AFTER RECEIPT AT STORE | <p>The material received at TPC, Mumbai store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection or any other parameters observed after delivery.</p> <p>The material should be delivered at TPC, Mumbai stores within 45 days from the date of manufacturing, same shall be checked during delivery and overdue material shall not be accepted. Bidders to plan the delivery accordingly.</p> <p>Bidders to attend and rectify the same at his own cost. The material shall be accepted in stores only after rectification of any observed flaw. The delay in rectification shall lead to any contractual penalty.</p> <p>Billing shall be processed only after acceptance of the material.</p> |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract.</p> <p>In the event any defect is found by the TATA POWER COMPANY up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements) Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the TATA POWER COMPANY will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit.</p> <ol style="list-style-type: none"> 1) Packing protection- Against shocks, vibration & corrosion, damages during transportation 2) Packing identification labels, to show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number 3) Handling instruction- To be marked on packing boxes. 4) Bidders should prefer to use recyclable & environmentally friendly materials for packing. 5) No single use plastic to be used. 6) Packing should be done with environment friendly recyclable materials. |
| 13.0 | TENDER SAMPLE | Not Applicable |
| 14.0 | QUALITY CONTROL | |

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| | | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> <p>TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections.</p> <p>If anything missing in QAP and required as per other clauses of this document, bidder is liable to perform the same without cost implication.</p> |
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards and as specified above. |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). |
| 17.0 | SPARES, ACCESSORIES, AND TOOLS | Keys of door |
| 18.0 | DRAWING AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid. All the documents & drawings shall be in English language</p> <p>a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates g) Any other technical document, if required</p> |
| 19.0 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS | Bidders to comply for all above requirement of specifications clauses & submit signed and stamp copy as technical compliance document. |
| 20.0 | SCHEDULE "B" DEVIATIONS | The bidders shall set out all deviations from this specification, Clause by Clause in this |

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schedule. Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications.

(TO BE ENCLOSED WITH THE BID)

All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

| Sr.No. | Clause No. | Details of deviation with justifications |
|--------|------------|------------------------------------------|
| | | |

We confirm that there are no deviations apart from those detailed above.

Seal of the Company

Signature :

Designation :

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| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 2500 A LT Panel with MCCB & Fuse |
| ENSE-DS-2028-R01 | | Date of Issue: 25/02/25 |

Annexure – 1

Inspection Testing Plan

1. Visual inspection & dimensional check
2. Verification of clearance and creepage distance
3. Paint thickness check
4. Wiring checks
5. Insulation resistance test
6. HV test
7. Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function
8. 1 unit from 1st lot shall be tested for Temperature rise test with ACB, MCCB and fuses. (Bidder to arrange for the same, either in factory or in external lab)

TATA POWER

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| | 25/02/25 | 25/02/25 | 25/02/25 |

Annexure – 2

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.



Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)



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| | 25/02/25 | 25/02/25 | 25/02/25 |

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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 2500 A LT Panel with MCCB & Fuse |
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Annexure – 3

Reference drawings

TATA POWER

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INCOMING SUPPLY
415V AC, TPN

7 Nos 4c X 300sq.mm AL Cond. Armoured XLPE / PVC Cable.

H7,H8,H9.

F35-F37,X38

F21-F23,X24

230V AC Control supply to
RMU Trip,
Transformer Marshalling Box,
Shunt Trip Coil, & spare

CT3 T7-T9
2000/5A
CL-0.5
10VA

P1

P2

X1

3 F31-F33,X34

TTB

(TVM not in scope)

241S Ashida Relay

ACB
FIXED TYPE
2000A TP

LT Breaker (S/T Coil)

2000A TP Fixed type ACB
S/T suitable for 240V AC

To Trip LT Breaker (S/T Coil)

(Not in scope)

T1-T3
2000/5A
0.5
15VA
CT 1: Core 1

P1

P2

X2

(MFM)

T4-T6
2000/5A
5P20
15VA
CT 1: Core 2

P1

P2

Alstom Make
CDG11 self-powered relay for earth fault protection
Normal inverse 3 sec
CTR : 5A
R2-A : To Trip LT Breaker (S/T Coil)
R2-B : To Trip HT Breaker (S/T Coil)

2000/5A
NEUTRAL CT

P1

P2

1

CT3 2000/5A
NEUTRAL CT

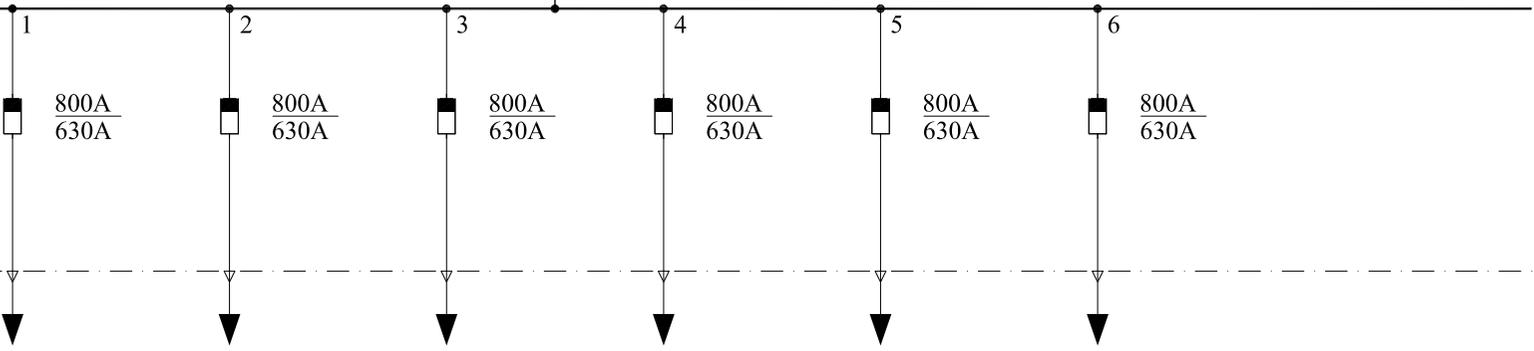
P1

P2

1

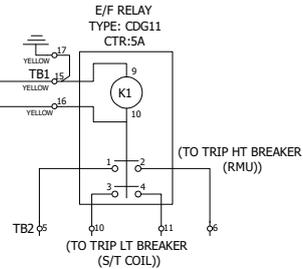
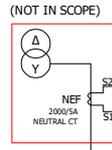
TPN AL. BUSBARS
SIZE :
Equivalent with 3000
sq.mm
PER PHASE &
FOR NEUTRAL

3:FUSE BASE
3:HRC FUSE LINK



TO OUTGOING BUS
R1 Y1 B1 N1

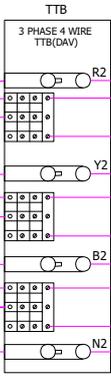
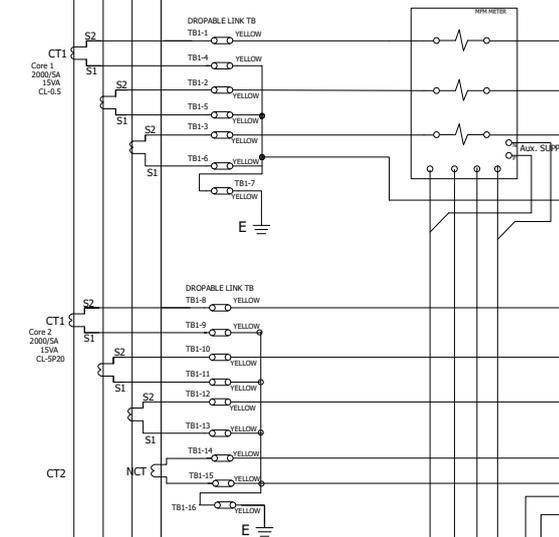
TPN AL BUSBARS
SIZE:
Equivalent with area
3000 sq.mm
PER PHASE &
FOR NEUTRAL



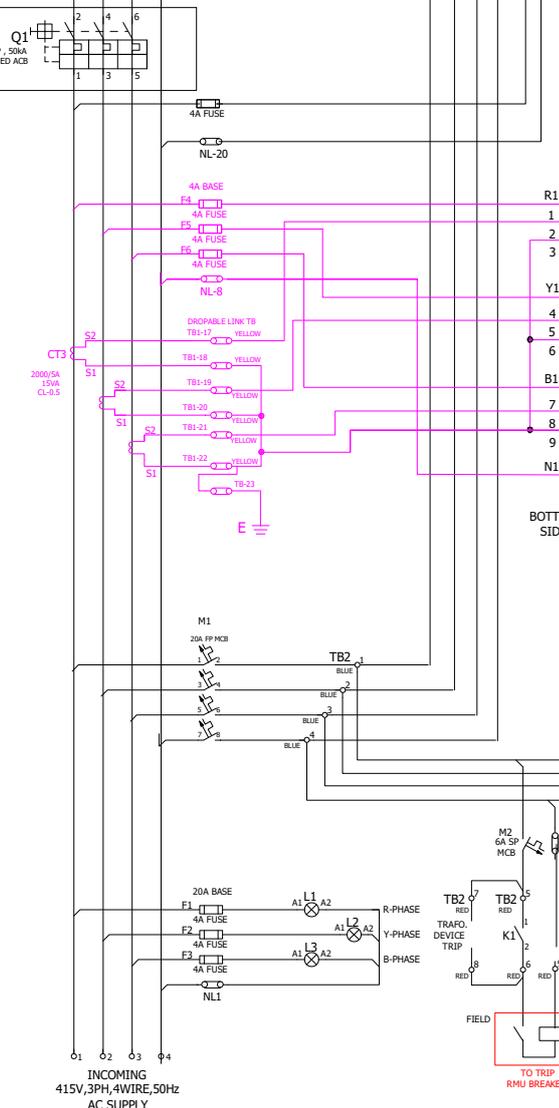
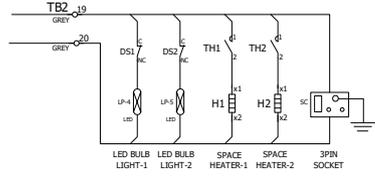
(NOT IN SCOPE)

P1

| TRIVECTOR METER (TVM) | | | | | | | | | | | |
|-----------------------|---|---|-------|---|---|------|----|----|-----|--|-----|
| CURRENT | | | INPUT | | | VOLT | | | ACB | | L/P |
| | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 8 | 9 | 10 | 11 | 12 | | |



BOTTOM SIDE ← TOP SIDE



LED BULB LIGHT-1
LED BULB LIGHT-2
SPACE HEATER-1
SPACE HEATER-2
3PIN SOCKET

20A BASE
F1 4A FUSE
F2 4A FUSE
F3 4A FUSE
NL1

A1 L1 A2 R-PHASE
A1 L2 A2 Y-PHASE
A1 L3 A2 B-PHASE

20A FP MCB M1
20A FP MCB M2
6A SP MCB M3
6A SP MCB M4
6A SP MCB M5
6A SP MCB M6
16A SP MCB M7

FIELD
TO TRIP RMU BREAKER
S/T LT BREAKER

NC FROM ACB 39, 40
NO FROM ACB 43, 44

TB2-21, 22 TO FIELD
TB2-23, 24 TO FIELD

TB COLOUR CODING :-
TB2 :- BLUE (FOR 4P MCB TERMINATION) [TB2-1 TO 4]
TB1 :- YELLOW (FOR CT TERMINATION) [TB1-1 TO 23]
TB2 :- RED (FOR TRIPPING) [TB2-5 TO 14, 27 & 28]
TB2 :- GREY (FOR OTHER WIRING) [TB2- 15 TO 24]

NOTE :- CONTROL FUSE/MCB INCOMING WIRING MUST BE FROM BOTTOM SIDE & OUTGOING WIRING FROM TOP SIDE.

TECHNICAL SPECIFICATION

6 Way & 8 Way 2500 A LT Panel

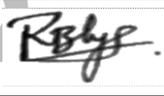
The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra

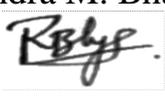
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way & 8 Way 2500 A LT Panel |
| ENSE-DS-2030-R01 | | Date of Issue: 25/02/25 |

TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2030-R01

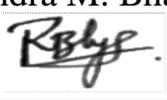
Document Title: Technical SPECIFICATION OF 6 Way & 8 Way 2500 A LT Panels

| R01 | ENSE-DS-2030-R01 | 25/02/2025 | | YMM |  | AVP |  | RMB |  |
|---------|------------------|------------|--|-------------|-----------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------|
| R00 | ENSE-DS-2030-R00 | 11/01/2024 | | YMM |  | AVP |  | RMB |  |
| Rev No. | Remarks | Date | | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | | Prepared By | | Reviewed By | | Approved & Issued By | |

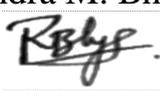
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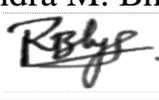
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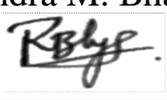
| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V, 2500 A LT Panel with 6 or 8 no Outgoing Feeders complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the purchaser (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2.0 | APPLICABLE STANDARDS | <p>The equipment shall conform to this specification and latest revision of following codes with all amendments.</p> <table border="1" data-bbox="424 891 1485 1639"> <thead> <tr> <th></th> <th>Title</th> <th>Indian standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>IS 8623</td> <td>Specification for low voltage switchgear</td> </tr> <tr> <td>2</td> <td>IS 12063/ IEC 60529</td> <td>Classification of degrees of protection provided by Enclosures of Electrical equipment</td> </tr> <tr> <td>3</td> <td>IS 5</td> <td>Color of ready mixed paints</td> </tr> <tr> <td>4</td> <td>IS 5082</td> <td>Wrought Aluminium & Al alloy plates & sheets for electrical application</td> </tr> <tr> <td>5</td> <td>IS 2705</td> <td>Current Transformers</td> </tr> <tr> <td>6</td> <td>IS 2551</td> <td>Danger Notice plates</td> </tr> <tr> <td>7</td> <td>IS 13703-2</td> <td>Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons</td> </tr> <tr> <td>8</td> <td>IEC 255</td> <td>Protection Relays</td> </tr> <tr> <td>9</td> <td>IEC 801</td> <td>Control and monitoring</td> </tr> <tr> <td>10</td> <td>IEC 60947-2 /IS 13947-2</td> <td>Low Voltage Switchgear & control gear</td> </tr> <tr> <td>11</td> <td>IEC 60269</td> <td>Low Voltage Fuses</td> </tr> </tbody> </table> <p>In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</p> | | Title | Indian standard | 1 | IS 8623 | Specification for low voltage switchgear | 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | 3 | IS 5 | Color of ready mixed paints | 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | 5 | IS 2705 | Current Transformers | 6 | IS 2551 | Danger Notice plates | 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | 8 | IEC 255 | Protection Relays | 9 | IEC 801 | Control and monitoring | 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | 11 | IEC 60269 | Low Voltage Fuses |
| | Title | Indian standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | IS 8623 | Specification for low voltage switchgear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | IS 5 | Color of ready mixed paints | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | IS 2705 | Current Transformers | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | IS 2551 | Danger Notice plates | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | IEC 255 | Protection Relays | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | IEC 60269 | Low Voltage Fuses | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | CLIMATIC CONDITIONS OF | <table border="1" data-bbox="448 1823 1449 1859"> <tr> <td>1</td> <td>Maximum ambient temperature</td> <td>43 deg.C</td> </tr> </table> | 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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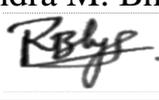
| THE INSTALLATION | 2 | Max. Daily average ambient temp | 35 deg.C | |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------|
| | 3 | Min Ambient Temperature | 07 deg.C | |
| | 4 | Maximum Relative Humidity | 100% | |
| | 5 | Minimum Relative Humidity | 40% | |
| | 6 | Average No. of thunderstorm per annum | 50 | |
| | 7 | Average Annual Rainfall | 2380mm | |
| | 8 | Average No. of rainy days per annum | 115 | |
| | 9 | Rainy months | June to Oct. | |
| | 10 | Altitude above MSL not exceeding | 300 meters | |
| | 11 | Average Air Pressure | 29.6-inch Hg | |
| | <p>Atmosphere is generally laden with mild acid and dust suspended during dry months and subjected to fog in cold months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.</p> | | | |
| | 4.0 GENERAL TECHNICAL REQUIREMENTS | Sr. No | Item Description | Tata Power Requirement |
| 1 | | Manufacturer | Name | |
| | | | Manufacturer Address | |
| | | | Contact telephone no | |
| 2 | | Breaker Rating (ACB) | 2500A Manual Fixed Type without any microprocessor relay. 230V AC Shunt tripping coil to be provided. | |
| | | Model of ACB | The Model shall be such that current density in current carrying part shall be less than 3 A/sq.mm. (Bidder to mention the model) | |
| | | Approved Make | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton | |
| 3 | | Main bus bar rating | 2500 A | |
| | | Bus bar Size for Phase & Neutral | 3600 sq.mm (2x150mmx12mm or equivalent) for Phase & Neutral | |
| | | Earth Bus | 1 x 50 x 10 mm GI | |
| 4 | | Type of Installation | Indoor/Outdoor Type | |
| 5 | | No of Incoming feeders | Qty -1no. of 2500A ACB with 8 Nos of 4CX300 sq.mm Al Ar XLPE cables | |
| 6 | No of outgoing feeders (8 Way) | Quantity -8 Nos of 630A each with 2 nos of 4CX300 sq.mm Al Ar XLPE cables per O/G | | |
| | No of outgoing feeders (6 Way) | Quantity -6 Nos of 630A each with 2 nos of 4CX300 sq.mm Al Ar XLPE cables per O/G | | |
| 7 | Panel construction | CRCA sheet steel of thickness 3 mm | | |
| 8 | Panel enclosure class | IP54 - ingress protection | | |

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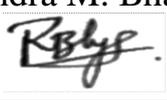
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| | | 9 | Sheet steel thickness | Doors & Covers - 2.5mm, FRAME - 3mm |
| | | 10 | Door type for front & rear access | Double door with rear door bolted |
| | | 11 | Door hinges | Minimum three anti-theft type hinges self-locking type |
| | | 12 | Padlocking facility | For front door |
| | | 13 | Master key for all doors | Identical for all panels, 1 no./ panel to be provided |
| | | 14 | Hardware & Fasteners | All Nuts, Bolts, Washers shall be Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. Bolts below 12 mm size shall be SS material. |
| | | 14a | Current Carrying part hardware | Each bolt on Bus Bar and Fuse terminal shall be provided with Belleville washer and plain washer. Wherever required bimetallic washers to be provided |
| | | 15 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 |
| | | | Bus bar size in mm for 2500 A O/G | 3600 sq.mm for Phase & Neutral |
| | | | 2500A ACB Incoming | 3600 sq.mm for Phase & Neutral |
| | | | ACB O/G LINKS | 3600 sq.mm for Phase & Neutral (Dimensions as per feasibility with Breaker palm connection) |
| | | 16 | Bus bar color coding for R, Y, B & neutral | Heat shrinkable sleeves with color Red, Yellow, Blue & Black respectively |
| | | 16 a | Bus Bar Heat shrinkable sleeves | Cross-linked Polyolefin (Bidder to specify thickness) |
| | | 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec |
| | | 18 | Permissible maximum temperature rise above ambient of 50°C | Busbar: 45 deg C |
| | | | Permissible maximum temperature rise above ambient of 50°C | Terminals: 65 deg C |
| | | 19 | Bus bar support insulators | As per IS13410 SMC / DMC, 1100V grade |
| | | 20 | Incoming Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | | 21 | Outgoing Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | | 22 | Gland plate at panel bottom | HRCA MS 3mm thickness |

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| | 23 | Cable termination clearance | 600 mm minimum from gland plate & ACB |
| | 24 | Fuse Base | 800 A |
| | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Bussmann / ABB |
| | 25 | Fuses (630 A) | HRC plug-in type gG (General Purpose, Fast acting fuse) |
| | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Bussmann / ABB |
| | 26 | CT's for 2500A Incoming Feeder | 7 Nos. Single resin cast. a) 3 nos dual core CT's of ratio 2500/5A <ul style="list-style-type: none"> • Core 1: Class 0.5 & 15VA burden – For MFM • Core 2: 5P20 & 15VA – For Ashida make O/C+E/F relay b) 3 nos single core CTs of ratio 2500/5 A, Class 0.5 & 15 VA for Energy meter (Energy meter is not in bidder scope) c) 1 no single core CT of ratio 2500/5A, 5P20 & 15 VA for Neutral unbalance protection Approved Make of CTs: Reco/Newtek/Pragati/Kappa/ECS/Adcon |
| | 27 | TTB for Metering | Front connection, Screw Type 3 Phase 4 Wire, 4SF, 50 A, DAV/IMP make |
| | 28 | Wiring convention for TTB | Incoming from Bottom Side & Outgoing to Meter from Top side |
| | 29 | Multifunction Digital meter | Should be communicable on Modbus RS 485 |
| | 30 | Earth Fault protection relay (NEF) | Alstom make CDG11 self-powered. Relay type is normal inverse with 3 Sec with E/F setting of 0.5 to 2 A |
| | 31 | Earthing Hardware | a) Earthing Nut and Bolt shall be M12 SS b) Washers shall be with Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. |
| | 31a | Panel Earthing | Earthing provision to be provided on both sides with 50 mm extension of main Earth Bus Bar. |
| | 32 | Clearance between live parts | Phase - phase -Minimum 25 mm & Phase - earth - Minimum 20 mm |
| 33 | Distance between each fuse outlet | Centre to Centre - 150mm (Minimum) | |

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|--|--|----|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | 34 | Distance between fuse outlet & panel surface | 125 mm (Minimum) |
| | | 35 | Control terminals for CTs | Stud type with disconnecting facilities |
| | | 36 | Control terminals for Voltage & other circuits | Stud type |
| | | 37 | Illumination and Indicating Bulb | LED |
| | | 38 | Continuous rated operating voltage | 440 volt +/- 10% |
| | | 39 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute |
| | | 40 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger |
| | | 41 | Labels & name plates | As per Specifications |
| | | 42 | Surface preparation for painting | Sand blasting or 7 tank process |
| | | 43 | Painting | Sand blasting or 7 tank process. Light grey shade No 631 of IS-5 Powder coated epoxy paint min thickness 120 micron |
| | | 44 | Power Supply Socket | 5A/15A Plug point socket to be provided |
| | | 45 | Breaker Barrier | Breaker must have a metallic removable sheet from the front side which will act as a barrier between operator and the breaker. Provision must be given for breaker operation to be done through this barrier. |
| | | 46 | Branding Plate | All supplied Units shall be fitted with engraved metallic logo of Tata Power on the front side. The Tata Power Co Ltd to be mentioned below the logo with clear font and Dimension 12*12 Inches. * Refer Annexure 2 |
| | | 47 | Panel Dimensions (Min depth of 800 mm) | L X D X H (For 6 W & 8W) |
| | | 48 | Numerical Relay | Ashida (ADR 241S) with 4 Element O/C & E/F protection |
| | | 49 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) |

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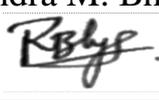
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**GENERAL
CONSTRUCTION**

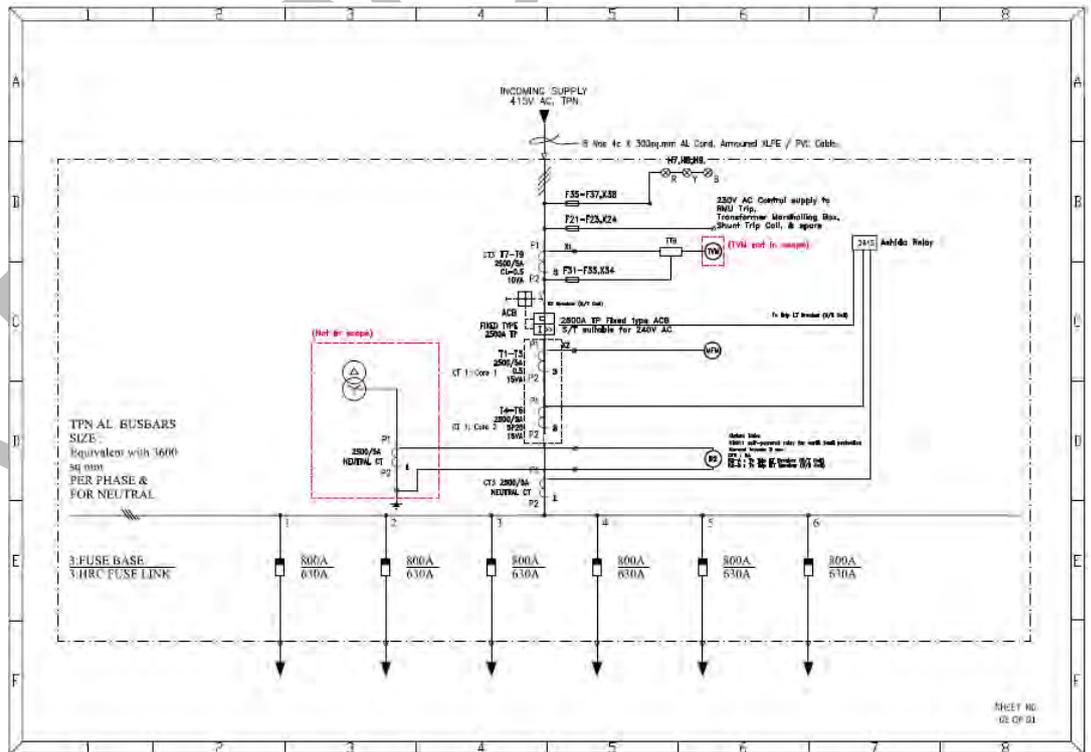
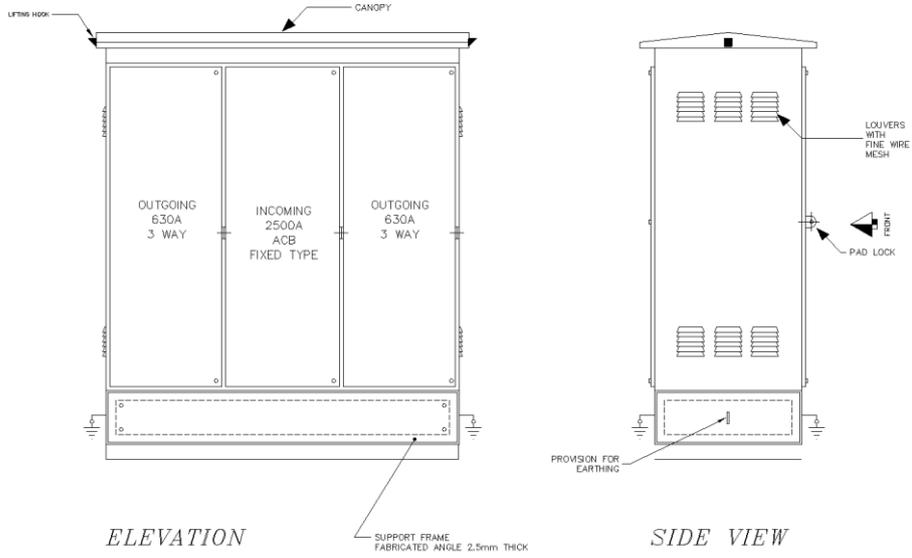
- 1) The feeder pillar frame shall be fabricated using suitable mild steel structural section or pressed and shaped Cold Rolled Closed Annealed (CRCA) sheet of thickness 3 mm.
- 2) Frames shall be enclosed by CRCA sheet of thickness 3mm, smoothly finished, levelled and free from flaws. Doors and cover shall be made of CRCA sheet of thickness not less than 2.5mm. Stiffeners shall be provided, wherever necessary. Gland plates shall be of Hot Rolled Closed Annealed (HRCA) thickness not less than 3 mm. alternatively gland can also be provided between two angles so that removal of gland is easy. The dimension of base frame should be 75mm X 40mm X 5 mm.
- 3) The panel shall be of metal enclosed and outdoor type, support frame mounted type with canopy of adequate slope to avoid water accumulation. Degree of protection shall be IP 54.
- 4) Breaker compartment and fuse compartment should be separated by metallic sheet; the same should be split suitably in order to avoid local heating due to eddy currents generated by three phase bus bars crossing through the same sheet. The breaker compartment should be in center of panel & Outgoings shall be on both the sides of breaker compartment.
- 5) The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on sides and top portion. The louvers shall have fine wire mesh made of brass. The minimum depth of panel shall be 800 mm.
- 6) Labels on the front and rear indicating the panel designation, phase marking and danger signs shall be provided. Single Line Diagram & feeder details shall be engraved and pasted on inside of panel.
- 7) Danger boards shall be provided in local languages on the Hylam sheet below breaker and on front & rear cover with red background and with white letters.
- 8) Hinged doors of lift off type, with concealed type with brass type hinges and captive screws shall be provided on the front side & Back side. Adequate numbers of door hinges shall be provided and should be durable and easy in operation. All doors shall be provided with padlocking facility. The design of doors should permit inter-changeability. The back-side doors shall have nut and bolt arrangement. All Hinged doors shall be connected to the earth terminal with 2.5 Sq.mm braided copper wires.
- 9) Cable entry facilities at bottom of panel and removable gland plates of size suitable to accommodate incoming & outgoing cables of sizes, 4 Core 300 Sq mm 1.1 KV XLPE Cable, shall be provided at required locations.
- 10) Distance between Gland plate and cable termination of Air Circuit Breaker should be minimum 600mm.
- 11) The panel shall be provided with gasket all around the perimeter of covers, gland plates, removable covers and doors.
- 12) ACB termination shall be with tinned copper or tinned aluminium Bus Bar. Wherever required bimetallic washer to be provide, if bare copper terminal is provided.

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- 13) Busbars shall be of aluminium with Bakelite shrouding, rated for 2500 A, 50 kA for 1 sec and shall have adequate cross section to carry the rated continuous and short time current. Main Bus bar should be continuous/ without any joint. All bus bars, bus taps and joints shall be PVC taped. Neutral bus bar shall be provided on read side & rated for full bus bar rating.
- 14) **The ACBs shall be mechanical operated fixed type 3 Pole with shunt trip coil without any microprocessor protection release. Ashida make (ADR41S) relay to be provided for tripping the breaker with Overcurrent & earth fault protection. Spare ACB contacts for shunt trip should be provided.**
- 15) All fuses shall be of the HRC cartridge type mounted on plug-in type fuse bases having a prospective current of not less than 80 kA.
- 16) Phase to phase clearance of 25mm and Phase to Neutral / Earth clearance of 20mm shall be provided in the panel.
- 17) Distance between centre to centre should be minimum 150 mm between each fuse outlet and 125 mm between fuse outlet and body of panel to be maintained.
- 18) The panel shall be provided with two separate earthing terminals connected to earth bus.
- 19) All instruments shall be connected to the earth terminal using 650V grade PVC insulated 2.5 sq mm stranded tinned copper earthing conductor. All Earthing should be routed properly along with body of panel.
- 20) All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of braided copper conductors of adequate size. Flat earth bus should be protruded out for connection of external earth
- 21) Eyebolt of suitable sizes shall be provided for lifting arrangements.
- 22) All wiring shall be carried out with 650V grade PVC insulated stranded copper conductors of adequate sizes to suit the rated circuit current.
- 23) The panel shall be powder coated with light shade grade no 631 of IS 5.
- 24) Required number of foundation bolts shall be supplied with the panel.
- 25) Control fuses with control terminals for external cable connections shall be in the breaker chamber only.
- 26) The control terminals shall be as follows:
- Stud type with disconnecting facilities for CT circuits
 - Stud type for voltage and other circuits.
- 27) Fuse bases shall have adequate contact surface with the bus bars provided to ensure that no local heating takes place.
- 28) Lighting System in Feeder Pillar should be LED based.

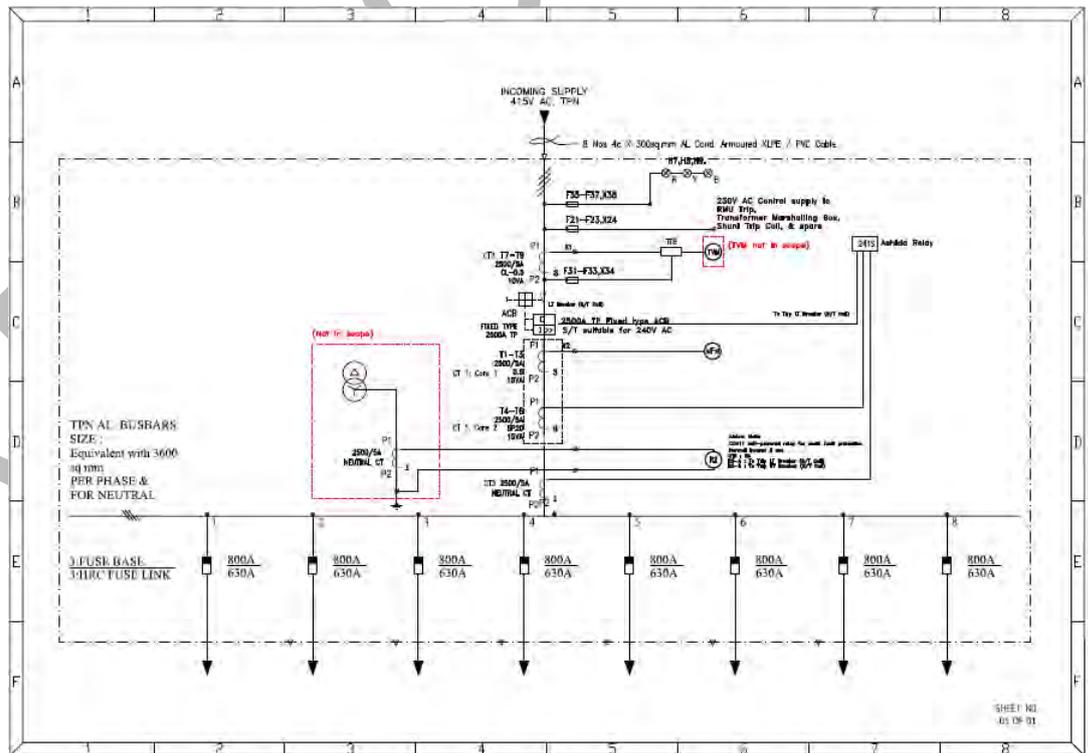
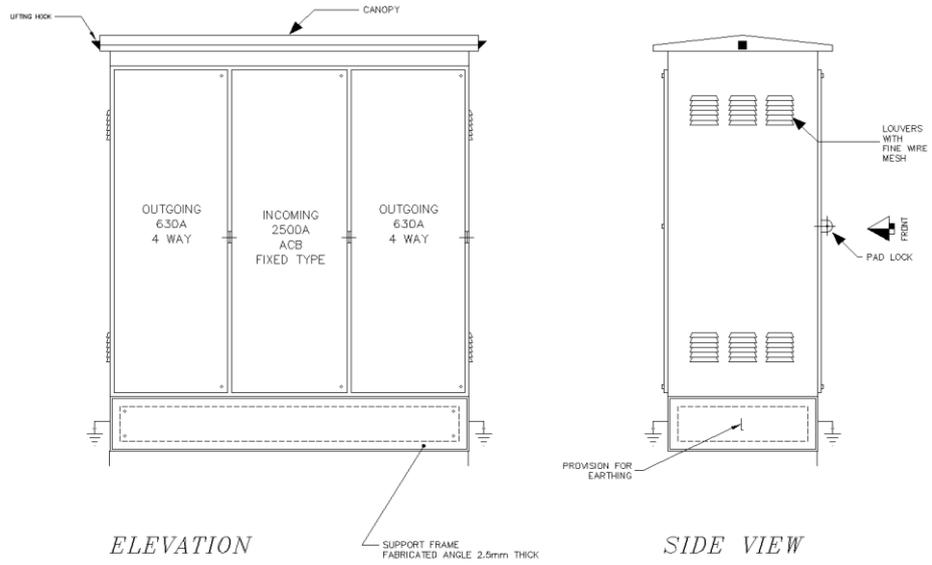
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6 Way LT Panel: Representative GA drawing & SLD-



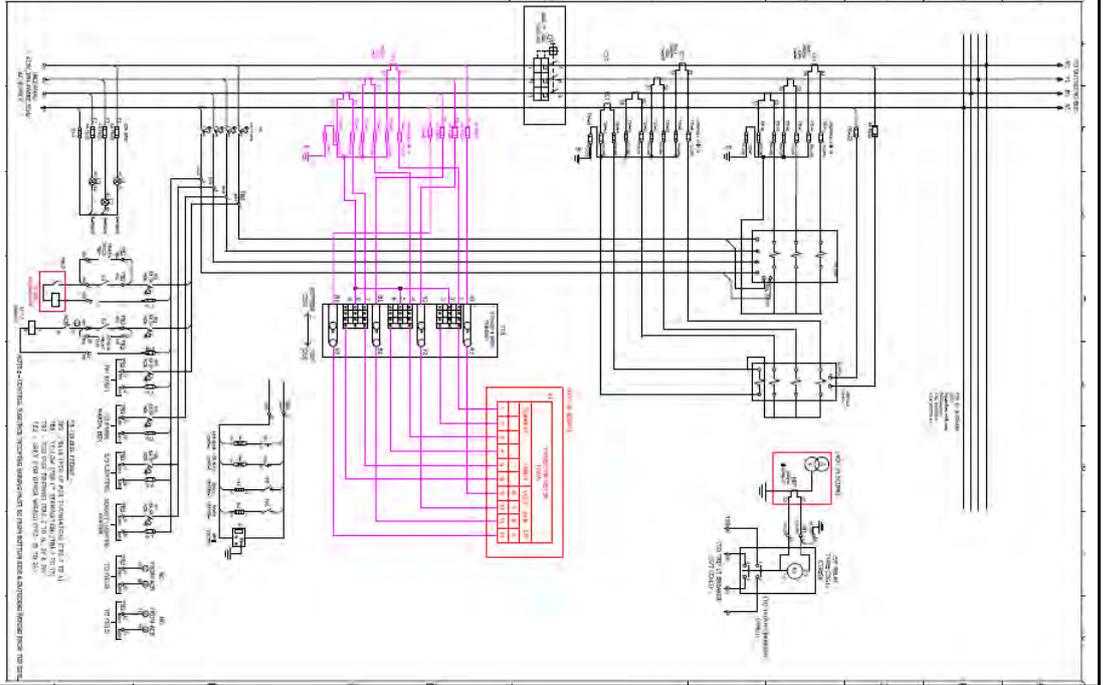
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8 Way LT Panel: Representative GA drawing & SLD-



Control Wiring Diagram:

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5.1 Specific Requirements

- a) The LT Panel should be 6 or 8-way type having 6 or 8 Nos. outlets per phase respectively as per tender requirement.
- b) Material Quality Plan, general arrangement drawing and single line diagram of the feeder pillar to be approved before manufacturing.
- c) Adequate cable termination shall be provided as follows

| Sr. No. | TYPE | UoM | No. of Cable | Description |
|---------|---------------------------------------|--------------------|--------------|------------------------------------------------------|
| 1 | 2500A Incomers | 1No. | 8 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 2 | 6 Way Panel 630 A Fuse Outgoing | 6 No. Per outgoing | 2 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 3 | 8 Way Panel 630 A Fuse Outgoing | 8 no. Per outgoing | 2 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |

- d) 2500A Incomer shall be provided with resin cast CTs of ratio 2500/5A for metering & protection.

3 nos dual core CT 2500A/5A, Core 1: 0.5 CI, Core 2: 5P20, 15 VA, to be used for MFM.

3 nos single core CT 2500A/5A, 0.5, 15 VA, to be used for Energy metering.

1 no single core CT 2000A/5A, 5P20, 15 VA, to be used for neutral unbalance protection.
- e) All CT termination should be round plug type. No CT shorting arrangement to be provided. (As per SLD)

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- f) Secondary wiring shall be carried out with 1.1KV grade PVC insulated stranded copper conductor of 2.5 Sq. mm for CT circuits and 2.5 Sq. mm for PT and other circuits. All wires will be colour coded.

| Sr. No. | Equipment | Color | Nomenclature of TBs | Types of TBs |
|---------|-------------------------------|---------|---------------------|--------------|
| 1. | TBs of 4 Pole MCB Termination | Blue | TB2 | Droppable |
| 2. | TBs for CT Termination | Yellow | TB1 | Droppable |
| 3. | TBs for Tripping | Red | TB2 | Droppable |
| 4. | All others | Default | TB2 | Normal |

- g) The feeder pillar panel shall be provided with Alstom Make CDG11 self-powered relay for earth fault protection. The relay type is normal inverse with 3 sec with E/F setting of 0.5 to 2 A.
- h) Test terminal box for Energy Metering should be Front Connection, Screw Type (4SF), 50 A to be provided and the convention of the wiring in the TTB should be Incoming from the bottom side and outgoing to Meter from top side. There must not be any partition between Relay & metering box in LV compartment. It should be single door compartment. No lugs shall be provided for wires to meter, TTB, and Fuses (PT secondary). Sealing arrangement to be provided for Energy Meters. Inspection glass (Transparent Toughened Glass) to be provided for viewing of meter.
- i) All Protection/ control wiring must terminate in LV compartment.
- j) Provision to be provided for mounting the energy meter with max dimensions as L x B x D: 360 x 200 x 200 mm (Energy meter will be supplied by TPC). The relay and energy meter shall be installed in the breaker compartment with suitable partitions. The relays shall be supplied by the vendor.
- k) The LT panel shall be equipped with shrouded type anti condensation space heaters with thermostat, internal light with switch & 5A/15A metal clad general-purpose plug socket.
- l) The following separate control circuit 20A, 4 pole MCB duly wired up to terminal block for purchaser's use shall be provided before the circuit breaker in feeder pillars leading to following single pole MCB with neutral links (refer SLD):

Phase and neutral for 230V supply to RMU. (6A)

Phase and neutral for 230V supply to Transformer marshalling box. (6A)

Phase and neutral for external shunt trip coil (6A)

Phase and neutral for FPI reset (6A)

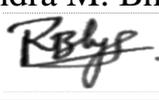
Separate 16A, DP MCB duly wired for Auxiliary supply for LT panel for following purpose,

Phase and neutral for substation lighting (6A)

Phase and neutral for Socket (15A)/ Heater circuit

Phase and neutral for Ashida overcurrent relay (4A)

- m) The following separate control fuses with neutral links duly wired out to a set of stud type link terminals for purchaser's use shall be provided before the circuit

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breaker in feeder pillars Control fuse Incoming wiring must be from bottom side & Outgoing wiring from top side. (refer SLD):

Three phase and neutral for metering circuit.

Three Phase and neutral for indication lamp

n) Locking should be of welded type. Earthing jumpers to be provided for all the doors. Louvers with stainless steel wire mesh to be provided on body side and cover plate.

o) Makes of various bought out items shall be limited to the following:

| Sr. No. | Items | Approved Make |
|---------|-------|-------------------------------------|
| 1 | ACB | L&T/C&S/Siemens/Schneider/ABB/Eaton |
| 2. | CT | Reco/Newtek/Pragati/Kappa/ECS/Adcon |

p) Flexible copper braiding should be provided on the doors. Neutral bus shall be connected with earth bus. All control cable should be multi stranded and FRLS. CT ISF should be less than or equal to 5. Close and Open status of the breaker should be available on SCADA through spare auxiliary contact and on LT panel through LED Lamp.

q) The fuses provide should be of knife type and same should be removable with the help of fuse puller. There shall be no obstruction during removal of outgoing fuses by fuse puller.

r) The safety locking facility to be provided for putting three nos. of safety locks.

s) Panel minimum width in mm: 800 mm

t) The breaker manufacturer to provide the complete support in terms of training; hand holding to our Testing and O&M staff. The breaker manufacturer to give the support service for next 10 years.

u) The robust isolating arrangement in the OG fuse compartment to be made.

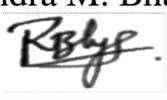
6.0

NAME PLATE AND MARKING

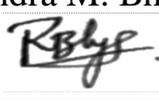
6.1 Name plate- On front door top left side-showing

1) Purchaser name & PO number.

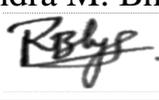
2) Manufacturer name

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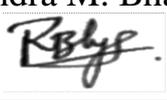
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| | | <p>3) Month / year of manufacturing</p> <p>4) 'Property of Tata Power'</p> <p>6.2 Marking for panel earth stud- Black letter 'E', on riveted Al label</p> <p>6.3 Danger board in English & local language, riveted on doors- White colour background with red lettering on 1.6mm thick Al plate.</p> <p>6.4 SLD shall be engraved & pasted on inside of door.</p> <p>6.5 CT Serial Nos., Ratio & ACB Serial Nos. to be written on doors with marker pen.</p> <p>6.6 Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown in Annexure-2.</p> |
| 7.0 | TESTS | <p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Feeder Pillar' in addition to others specified in IS/IEC standards.</p> <p>*In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid.</p> |
| 7.1 | Type test | <p>Type test - Only type tested components – ACBs, Fuses, Insulators & aluminium bus bar shall be accepted. Following type test shall be carried out on the assembly.</p> <p>a) Verification of temperature-rise limits – Clause 8.2.1 of IS 8623</p> <p>b) Verification of dielectric properties – Clause 8.2.2 of IS 8623</p> <p>c) Verification of short-circuits strength – Clause 8.2.3 of IS 8623</p> <p>d) Verification of continuity of the protective circuit – Clause 8.2.4 of IS 8623</p> <p>e) Verification of clearance and creepage distances – Clause 8.2.5 of IS 8623</p> <p>f) Verification of mechanical operation – Clause 8.2.6 of IS 8623</p> <p>f) Verification of degree of protection – Clause 8.2.7 of IS 8623</p> |
| 7.2 | Routine test | <p>Acceptance & routine test- (Inspection test witness by purchaser as per approved Quality Assurance Plan)</p> <p>1) Visual inspection, dimension checks & paint thickness checks.</p> <p>2) Bill of material check</p> <p>3) Insulation resistance test</p> <p>4) High voltage test</p> <p>5) Operational check</p> <p>6) Verification of dielectric properties</p> <p>7) Tolerances on panel dimensions- Maximum +/- 5mm</p> <p>8) No negative tolerance on bus bar dimensions & bus bar clearances</p> <p>9) Stability test shall be conducted on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> |
| 7.3 | Acceptance test | <p>1) Visual inspection & dimensional check</p> <p>2) Verification of clearance and creepage distance</p> <p>3) Paint thickness check</p> <p>4) Wiring checks</p> <p>5) Insulation resistance test</p> <p>6) HV test</p> <p>7) Stability test on all Panels, to ensure there shall be no tripping in case of unbalance</p> |

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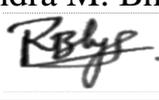
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| | | current on earth fault function. 8) 1 unit from 1st lot shall be tested for Temperature rise test with ACB and fuses. (Bidder to arrange for the same, either in factory or in external lab) |
| 8.0 | TYPE TEST CERTIFICATE | <p>The Bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. Type Test to be conducted on similar Design/ rating panel. All the tests shall be conducted at CPRI / ERDA/ NABL as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 10 years from the date of opening the bid.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> |
| 9.0 | PRE-DISPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY 's representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection.</p> <p>Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY. Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> Test reports MDCC issued by TATA POWER COMPANY Invoice in duplicate Packing list Drawings & catalogue Delivery Challan Other Documents (as applicable). |
| 10.0 | INSPECTION AFTER RECEIPT AT STORE | <p>The material received at TPC, Mumbai store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection or any other parameters observed after delivery.</p> <p>The material should be delivered at TPC, Mumbai stores within 45 days from the date of manufacturing, same shall be checked during delivery and overdue material shall not be accepted. Bidders to plan the delivery accordingly.</p> |

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|------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | <p>Bidders to attend and rectify the same at his own cost. The material shall be accepted in stores only after rectification of any observed flaw. The delay in rectification shall lead to any contractual penalty.</p> <p>Billing shall be processed only after acceptance of the material.</p> |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract.</p> <p>In the event any defect is found by the TATA POWER COMPANY up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements) Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the TATA POWER COMPANY will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit.</p> <ol style="list-style-type: none"> 1) Packing protection- Against shocks, vibration & corrosion, damages during transportation 2) Packing identification labels, to show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number 3) Handling instruction- To be marked on packing boxes. 4) Bidders should prefer to use recyclable & environmentally friendly materials for packing. 5) No single use plastic to be used. 6) Packing should be done with environment friendly recyclable materials. |
| 13.0 | TENDER SAMPLE | Not Applicable |
| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> |

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| | | TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections. If anything missing in QAP and required as per other clauses of this document, bidder is liable to perform the same without cost implication. | | | | | | |
|--------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|------------------------------------------|--|--|--|
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards and as specified above. | | | | | | |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). | | | | | | |
| 17.0 | SPARES, ACCESSORIES, AND TOOLS | Keys of door | | | | | | |
| 18.0 | DRAWING AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid. All the documents & drawings shall be in English language</p> <p>a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates g) Any other technical document, if required</p> | | | | | | |
| 19.0 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS | Bidders to comply for all above requirement of specifications clauses & submit signed and stamp copy as technical compliance document. | | | | | | |
| 20.0 | SCHEDULE "B" DEVIATIONS | <p>The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications.</p> <p>(TO BE ENCLOSED WITH THE BID)</p> <p>All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:</p> <table border="1" data-bbox="427 1771 1473 1830"> <thead> <tr> <th>Sr.No.</th> <th>Clause No.</th> <th>Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | Sr.No. | Clause No. | Details of deviation with justifications | | | |
| Sr.No. | Clause No. | Details of deviation with justifications | | | | | | |
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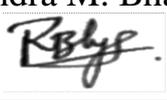
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We confirm that there are no deviations apart from those detailed above.

Seal of the Company

Signature :

Designation :

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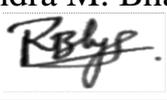
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way & 8 Way 2500 A LT Panel |
| ENSE-DS-2030-R01 | | Date of Issue: 25/02/25 |

Annexure – 1

Inspection Testing Plan

1. Visual inspection & dimensional check
2. Verification of clearance and creepage distance
3. Paint thickness check
4. Wiring checks
5. Insulation resistance test
6. HV test
7. Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function
8. 1 unit from 1st lot shall be tested for Temperature rise test with ACB and fuses. (Bidder to arrange for the same, either in factory or in external lab)

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Annexure – 2

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.

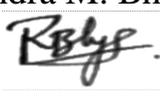


Centre aligned - Stacked (Preferred)

Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.



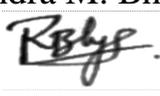
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| R01 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

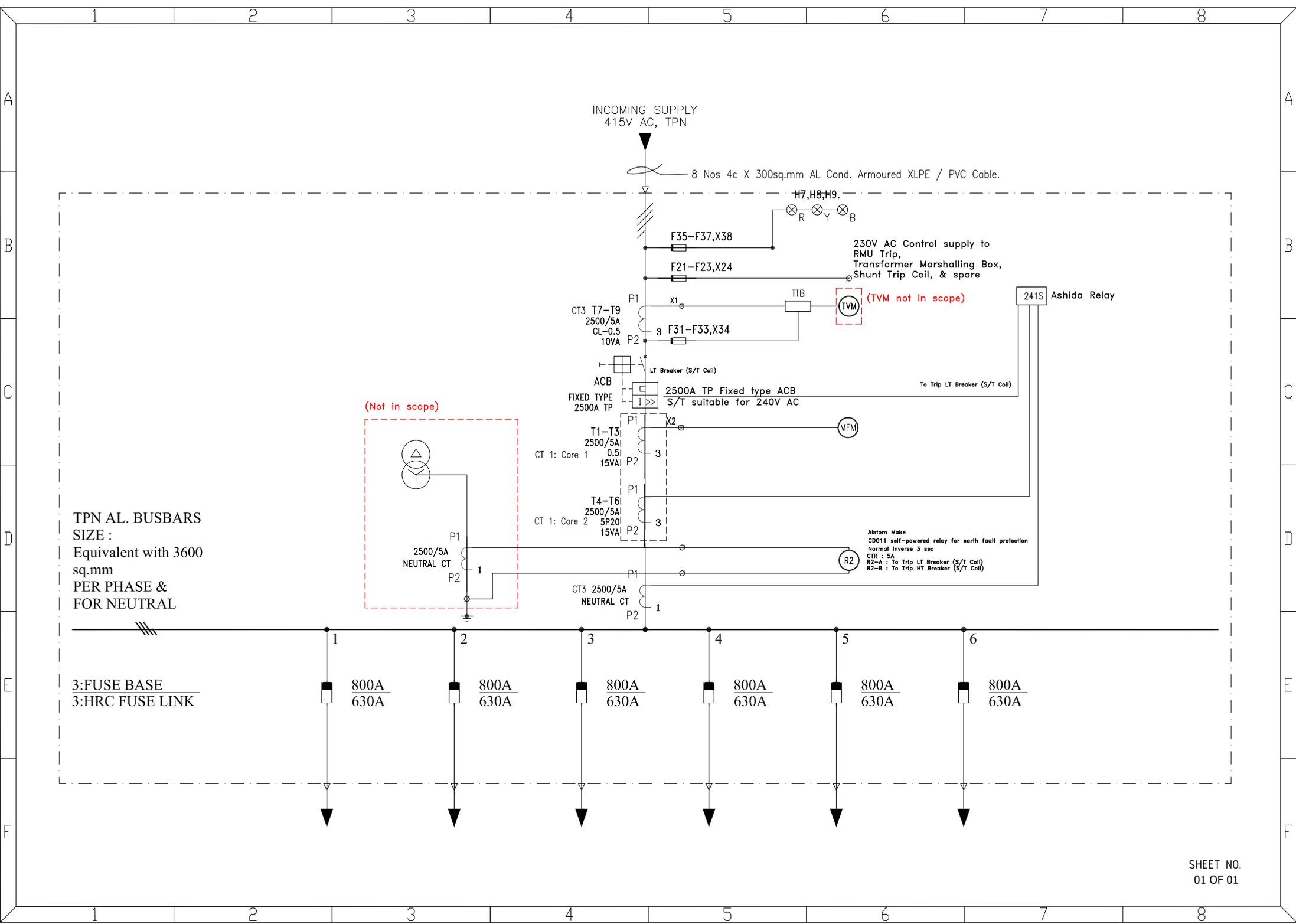
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way & 8 Way 2500 A LT Panel |
| ENSE-DS-2030-R01 | | Date of Issue: 25/02/25 |

Annexure – 3

Reference drawings

TATA POWER

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INCOMING SUPPLY
415V AC, TPN

8 Nos 4c X 300sq.mm AL Cond. Armoured XLPE / PVC Cable.

H7,H8,H9.

F35-F37,X38

F21-F23,X24

230V AC Control supply to
RMU Trip,
Transformer Marshalling Box,
Shunt Trip Coil, & spare

CT3 T7-T9
2500/5A
CL-0.5
10VA

P1
P2

X1

TTB

(TVM not in scope)

241S Ashida Relay

3 F31-F33,X34

LT Breaker (S/T Coil)

ACB
FIXED TYPE
2500A TP

2500A TP Fixed type ACB
S/T suitable for 240V AC

To Trip LT Breaker (S/T Coil)

(Not in scope)

T1-T3
2500/5A
0.5
15VA

P1
P2

X2

(MFM)

T4-T6
2500/5A
5P20
15VA

P1
P2

Alstom Make
CDG11 self-powered relay for earth fault protection
Normal Inverse 3 sec
CTR : 5A
R2-A : To Trip LT Breaker (S/T Coil)
R2-B : To Trip HT Breaker (S/T Coil)

(R2)

CT3 2500/5A
NEUTRAL CT

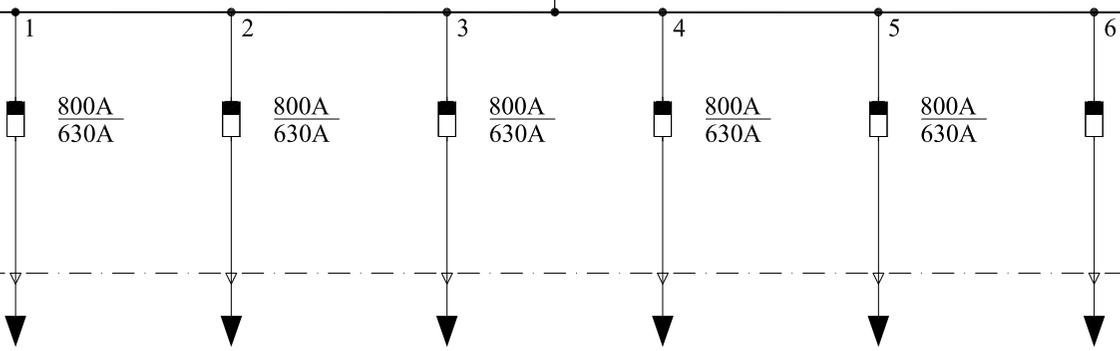
P1
P2

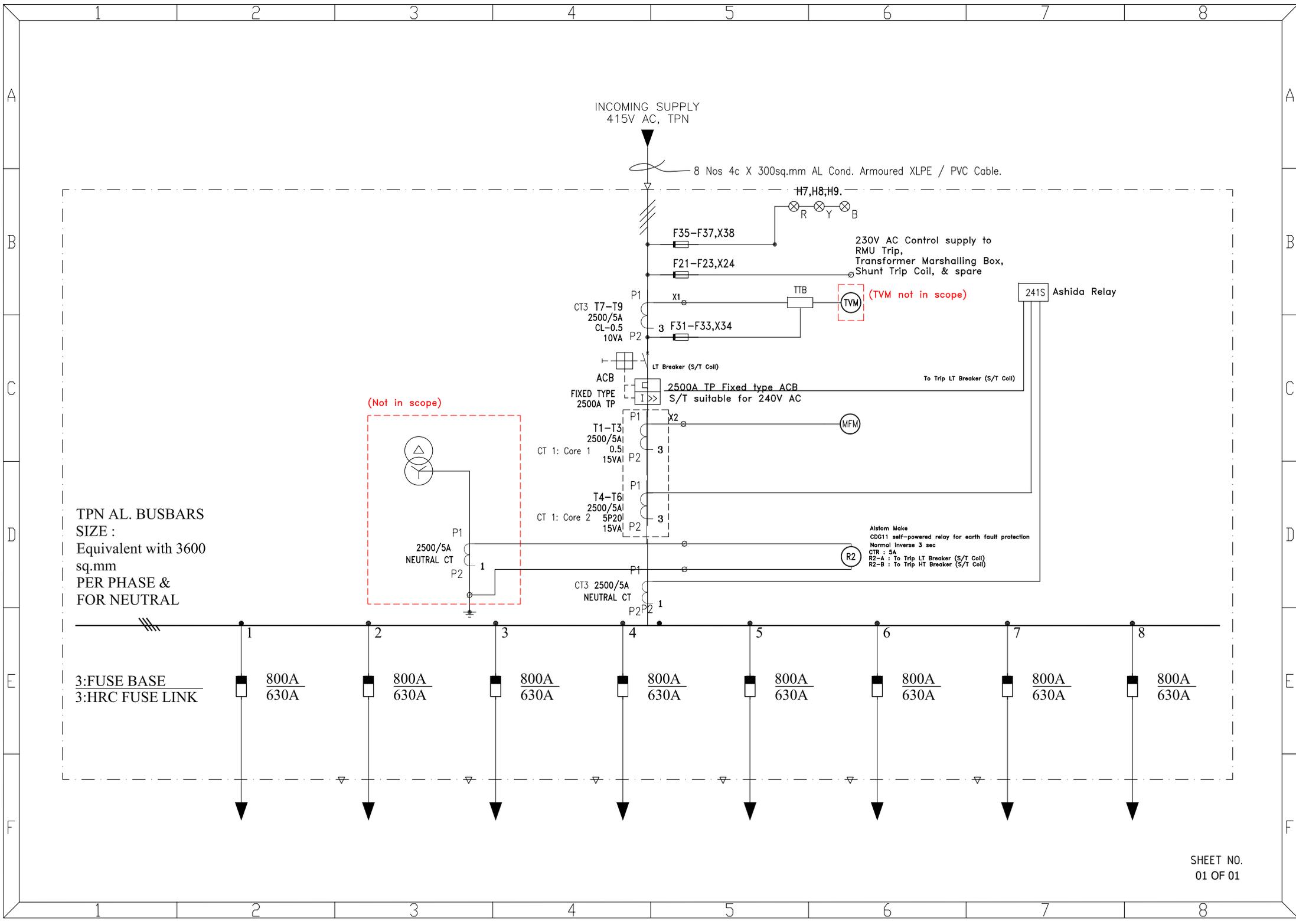
2500/5A
NEUTRAL CT

P1
P2

TPN AL. BUSBARS
SIZE :
Equivalent with 3600
sq.mm
PER PHASE &
FOR NEUTRAL

3:FUSE BASE
3:HRC FUSE LINK





INCOMING SUPPLY
415V AC, TPN

8 Nos 4c X 300sq.mm AL Cond. Armoured XLPE / PVC Cable.

H7,H8,H9.

F35-F37,X38

F21-F23,X24

230V AC Control supply to
RMU Trip,
Transformer Marshalling Box,
Shunt Trip Coil, & spare

TTB

(TVM not in scope)

241S Ashida Relay

CT3 T7-T9
2500/5A
CL-0.5
10VA

P1

P2

X1

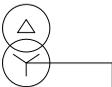
3 F31-F33,X34

To Trip LT Breaker (S/T Coil)

ACB
FIXED TYPE
2500A TP

2500A TP Fixed type ACB
S/T suitable for 240V AC

(Not in scope)



2500/5A
NEUTRAL CT

T1-T3
2500/5A
0.5
15VA

T4-T6
2500/5A
5P20
15VA

P1

P2

X2

3

CT3 2500/5A
NEUTRAL CT

P1

P2

1

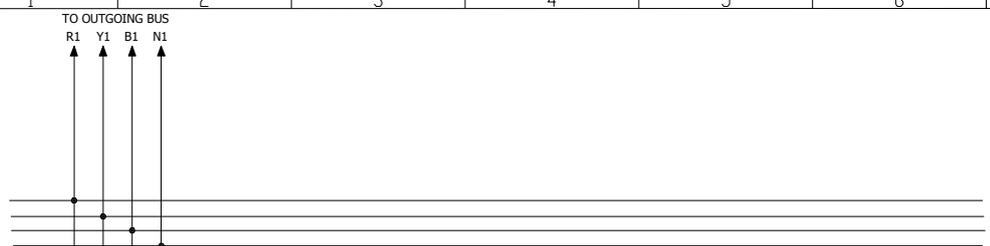
Aistom Make
CDG11 self-powered relay for earth fault protection
Normal Inverse 3 sec
CTR : 5A
R2-A : To Trip LT Breaker (S/T Coil)
R2-B : To Trip HT Breaker (S/T Coil)

R2

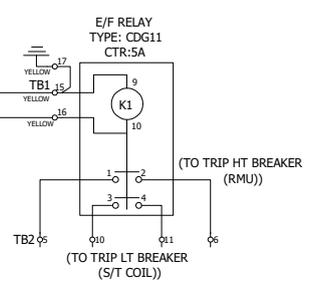
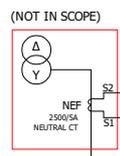
TPN AL. BUSBARS
SIZE :
Equivalent with 3600
sq.mm
PER PHASE &
FOR NEUTRAL

3:FUSE BASE
3:HRC FUSE LINK

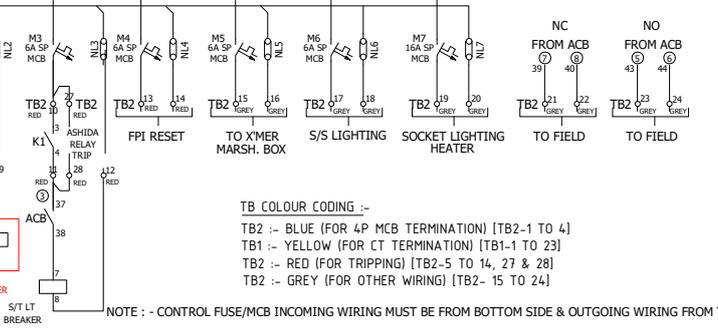
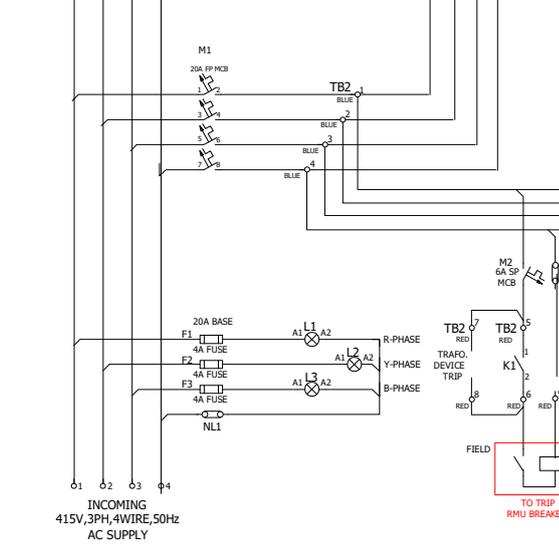
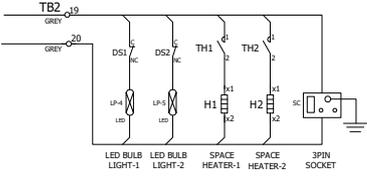
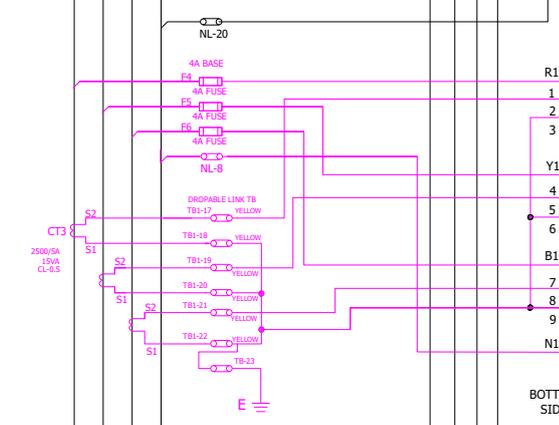
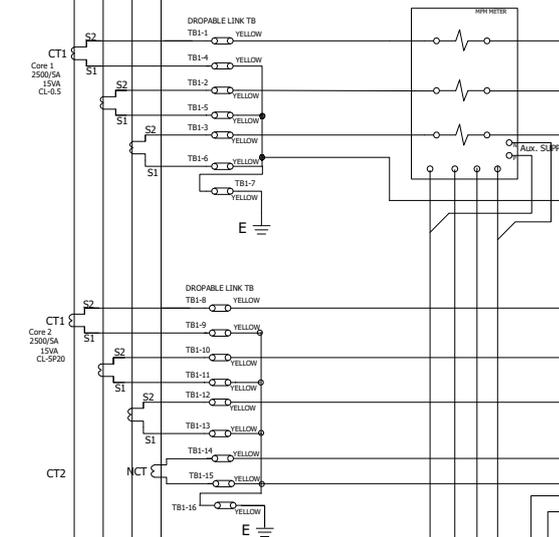
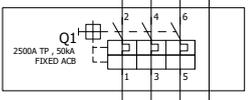
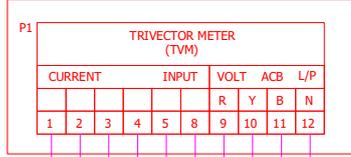
800A
630A



TPN AL BUSBARS
 SIZE: Equivalent with area
 3600 sq.mm
 PER PHASE &
 FOR NEUTRAL



(NOT IN SCOPE)



TB COLOUR CODING :-
 TB2 -- BLUE (FOR 4P MCB TERMINATION) [TB2-1 TO 4]
 TB1 -- YELLOW (FOR CT TERMINATION) [TB1-1 TO 23]
 TB2 -- RED (FOR TRIPPING) [TB2-5 TO 14, 27 & 28]
 TB2 -- GREY (FOR OTHER WIRING) [TB2- 15 TO 24]

NOTE :- CONTROL FUSE/MCB INCOMING WIRING MUST BE FROM BOTTOM SIDE & OUTGOING WIRING FROM TOP SIDE.

TECHNICAL SPECIFICATION

6 Way 2000 A LT Panel

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra

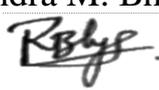
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way 2000 A LT Panel |
| ENSE-DS-2032-R01 | | Date of Issue: 25/02/25 |

TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2032-R01

Document Title: Technical SPECIFICATION OF 6 Way 2000 A LT Panels

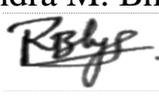
| R01 | ENSE-DS-2032-R00 | 25/02/25 | YMM |  | AVP |  | RMB |  |
|---------|------------------------------|------------|-------------|-----------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------|
| R00 | ENSE-DS-2032-R00 | 11/01/2024 | YMM |  | AVP |  | RMB |  |
| R2 | SPEC-NET-Feeder Pillar-2000A | 14/7/17 | ND | -sd- | SBK | -sd- | CKC | -sd- |
| R1 | SPEC-NET-Feeder Pillar-2000A | 13/10/16 | ND | -sd- | SBK | -sd- | CKC | -sd- |
| R0 | SPEC-NET-Feeder Pillar-2000A | 10/06/16 | AP | -sd- | SBK | -sd- | CKC | -sd- |
| Rev No. | Remarks | Date | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | Prepared By | | Reviewed By | | Approved & Issued By | |

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/25 | 25/02/25 | 25/02/25 |

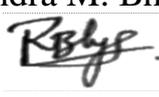
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way 2000 A LT Panel |
| ENSE-DS-2032-R01 | | Date of Issue: 25/02/25 |

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| + ANNEXURE 1, 2 & 3 | |

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| | 25/02/25 | 25/02/25 | 25/02/25 |

| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V, 2000 A LT Panel with 6 no Outgoing Feeders complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the purchaser (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------|-----------------|---|---------|------------------------------------------|---|---------------------|----------------------------------------------------------------------------------------|---|------|-----------------------------|---|---------|-------------------------------------------------------------------------|---|---------|----------------------|---|---------|----------------------|---|------------|----------------------------------------------------------------------------------------------------------------|---|---------|-------------------|---|---------|------------------------|----|-------------------------|---------------------------------------|----|-----------|-------------------|
| 2.0 | APPLICABLE STANDARDS | <p>The equipment shall conform to this specification and latest revision of following codes with all amendments.</p> <table border="1" data-bbox="424 857 1485 1608"> <thead> <tr> <th></th> <th>Title</th> <th>Indian standard</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>IS 8623</td> <td>Specification for low voltage switchgear</td> </tr> <tr> <td>2</td> <td>IS 12063/ IEC 60529</td> <td>Classification of degrees of protection provided by Enclosures of Electrical equipment</td> </tr> <tr> <td>3</td> <td>IS 5</td> <td>Color of ready mixed paints</td> </tr> <tr> <td>4</td> <td>IS 5082</td> <td>Wrought Aluminium & Al alloy plates & sheets for electrical application</td> </tr> <tr> <td>5</td> <td>IS 2705</td> <td>Current Transformers</td> </tr> <tr> <td>6</td> <td>IS 2551</td> <td>Danger Notice plates</td> </tr> <tr> <td>7</td> <td>IS 13703-2</td> <td>Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons</td> </tr> <tr> <td>8</td> <td>IEC 255</td> <td>Protection Relays</td> </tr> <tr> <td>9</td> <td>IEC 801</td> <td>Control and monitoring</td> </tr> <tr> <td>10</td> <td>IEC 60947-2 /IS 13947-2</td> <td>Low Voltage Switchgear & control gear</td> </tr> <tr> <td>11</td> <td>IEC 60269</td> <td>Low Voltage Fuses</td> </tr> </tbody> </table> <p>In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</p> | | Title | Indian standard | 1 | IS 8623 | Specification for low voltage switchgear | 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | 3 | IS 5 | Color of ready mixed paints | 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | 5 | IS 2705 | Current Transformers | 6 | IS 2551 | Danger Notice plates | 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | 8 | IEC 255 | Protection Relays | 9 | IEC 801 | Control and monitoring | 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | 11 | IEC 60269 | Low Voltage Fuses |
| | Title | Indian standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | IS 8623 | Specification for low voltage switchgear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | IS 5 | Color of ready mixed paints | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | IS 2705 | Current Transformers | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | IS 2551 | Danger Notice plates | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | IEC 255 | Protection Relays | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | IEC 801 | Control and monitoring | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | IEC 60269 | Low Voltage Fuses | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | CLIMATIC CONDITIONS OF | <table border="1" data-bbox="448 1823 1449 1859"> <tr> <td>1</td> <td>Maximum ambient temperature</td> <td>43 deg.C</td> </tr> </table> | 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/25 | 25/02/25 | 25/02/25 |

**THE
INSTALLATION**

| | | |
|----|---------------------------------------|--------------|
| 2 | Max. Daily average ambient temp | 35 deg.C |
| 3 | Min Ambient Temperature | 07 deg.C |
| 4 | Maximum Relative Humidity | 100% |
| 5 | Minimum Relative Humidity | 40% |
| 6 | Average No. of thunderstorm per annum | 50 |
| 7 | Average Annual Rainfall | 2380mm |
| 8 | Average No. of rainy days per annum | 115 |
| 9 | Rainy months | June to Oct. |
| 10 | Altitude above MSL not exceeding | 300 meters |
| 11 | Average Air Pressure | 29.6-inch Hg |

Atmosphere is generally laden with mild acid and dust suspended during dry months and subjected to fog in cold months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.

4.0**GENERAL
TECHNICAL
REQUIREMENTS**

| Sr. No | Item Description | Tata Power Requirement |
|--------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1 | Manufacturer | Name |
| | | Manufacturer Address |
| | | Contact telephone no |
| 2 | Breaker Rating (ACB) | 2000A Manual Fixed Type without any microprocessor relay. 230V AC Shunt tripping coil to be provided. |
| | Model of ACB | The Model shall be such that current density in current carrying part shall be less than 3 A/sq.mm. (Bidder to mention the model) |
| | Approved Make | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton |
| 3 | Main bus bar rating | 2000 A |
| | Bus bar Size for Phase & Neutral | 3000 sq.mm for Phase & Neutral |
| | Earth Bus | 1 x 50 x 10 mm GI |
| 4 | Type of Installation | Indoor/Outdoor Type |
| 5 | No of Incoming feeders | Qty - 1no. of 2000A ACB with 7 Nos of 4CX300 sq.mm Al Ar XLPE cables |
| 6 | No of outgoing feeders (6 Way) | Quantity - 6 Nos of 630A each with 2 nos of 4CX300 sq.mm Al Ar XLPE cables per O/G |
| 7 | Panel construction | CRCA sheet steel of thickness 3 mm |
| 8 | Panel enclosure class | IP54 - ingress protection |
| 9 | Sheet steel thickness | Doors & Covers - 2.5mm, FRAME - 3mm |

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& Date

R00

Yash M. Mane

Ajay V. Potdar

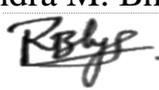
Ravindra M. Bhanage

25/02/25

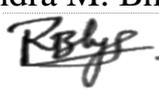
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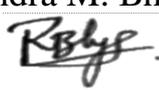
| | | | |
|--|------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 10 | Door type for front & rear access | Double door with rear door bolted |
| | 11 | Door hinges | Minimum three anti-theft type hinges self-locking type |
| | 12 | Padlocking facility | For front door |
| | 13 | Master key for all doors | Identical for all panels, 1 no./ panel to be provided |
| | 14 | Hardware & Fasteners | All Nuts, Bolts, Washers shall be Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. Bolts below 12 mm size shall be SS material. |
| | 14a | Current Carrying part hardware | Each bolt on Bus Bar and Fuse terminal shall be provided with Belleville washer and plain washer. Wherever required bimetallic washers to be provided |
| | 15 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 |
| | | Bus bar size in mm for 2000 A O/G | 3000 sq.mm for Phase & Neutral |
| | | 2000A ACB Incoming | 3000 sq.mm for Phase & Neutral |
| | | ACB O/G LINKS | 3000 sq.mm for Phase & Neutral (Dimensions as per feasibility with Breaker palm connection) |
| | 16 | Bus bar color coding for R, Y, B & neutral | Heat shrinkable sleeves with color Red, Yellow, Blue & Black respectively |
| | 16 a | Bus Bar Heat shrinkable sleeves | Cross-linked Polyolefin (Bidder to specify thickness) |
| | 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec |
| | 18 | Permissible maximum temperature rise above ambient of 50°C | Busbar: 45 deg C |
| | | Permissible maximum temperature rise above ambient of 50°C | Terminals: 65 deg C |
| | 19 | Bus bar support insulators | As per IS13410 SMC / DMC, 1100V grade |
| | 20 | Incoming Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | 21 | Outgoing Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | 22 | Gland plate at panel bottom | HRCA MS 3mm thickness |
| | 23 | Cable termination clearance | 600 mm minimum from gland plate & ACB |

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| | 25/02/25 | 25/02/25 | 25/02/25 |

| | | | | |
|----|----------------------------------------------|------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | 24 | Fuse Base | 800 A |
| | | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Busmann / ABB |
| | | 25 | Fuses (630 A) | HRC plug-in type gG (General Purpose, Fast acting fuse) |
| | | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Busmann / ABB |
| | | 26 | CT's for 2000A Incoming Feeder | 7 Nos. Single resin cast. |
| | | | | a) 3 nos dual core CT's of ratio 2000/5A <ul style="list-style-type: none"> • Core 1: Class 0.5 & 15VA burden – For MFM • Core 2: 5P20 & 15VA – For Ashida make O/C+E/F relay b) 3 nos single core CTs of ratio 2000/5 A, Class 0.5 & 15 VA for Energy meter (Energy meter is not in bidder scope) c) 1 no single core CT of ratio 2000/5A, 5P20 & 15 VA for Neutral unbalance protection Approved Make of CTs: Reco/Newtek/Pragati/Kappa/ECS/Adcon |
| | | 27 | TTB for Metering | Front connection, Screw Type 3 Phase 4 Wire, 4SF, 50 A, DAV/IMP make |
| | | 28 | Wiring convention for TTB | Incoming from Bottom Side & Outgoing to Meter from Top side |
| | | 29 | Multifunction Digital meter | Should be communicable on Modbus RS 485 |
| | | 30 | Earth Fault protection relay (NEF) | Alstom make CDG11 self-powered. Relay type is normal inverse with 3 Sec with E/F setting of 0.5 to 2 A |
| | | 31 | Earthing Hardware | a) Earthing Nut and Bolt shall be M12 SS b) Washers shall be with Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. |
| | | 31a | Panel Earthing | Earthing provision to be provided on both sides with 50 mm extension of main Earth Bus Bar. |
| | | 32 | Clearance between live parts | Phase - phase -Minimum 25 mm & Phase - earth - Minimum 20 mm |
| | | 33 | Distance between each fuse outlet | Centre to Centre - 150mm (Minimum) |
| 34 | Distance between fuse outlet & panel surface | 125 mm (Minimum) | | |

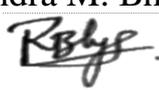
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| | | | |
|-----|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 35 | Control terminals for CTs | Stud type with disconnecting facilities |
| | 36 | Control terminals for Voltage & other circuits | Stud type |
| | 37 | Illumination and Indicating Bulb | LED |
| | 38 | Continuous rated operating voltage | 440 volt +/- 10% |
| | 39 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute |
| | 40 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger |
| | 41 | Labels & name plates | As per Specifications |
| | 42 | Surface preparation for painting | Sand blasting or 7 tank process |
| | 43 | Painting | Sand blasting or 7 tank process. Light grey shade No 631 of IS-5 Powder coated epoxy paint min thickness 120 micron |
| | 44 | Power Supply Socket | 5A/15A Plug point socket to be provided |
| | 45 | Breaker Barrier | Breaker must have a metallic removable sheet from the front side which will act as a barrier between operator and the breaker. Provision must be given for breaker operation to be done through this barrier. |
| | 46 | Branding Plate | All supplied Units shall be fitted with engraved metallic logo of Tata Power on the front side. The Tata Power Co Ltd to be mentioned below the logo with clear font and Dimension 12*12 Inches. * Refer Annexure 2 |
| | 47 | Panel Dimensions (Max depth of 800 mm & Max length 1800 mm) | L X D X H |
| | 48 | Numerical Relay | Ashida (ADR 241S) with 4 Element O/C + E/F protection |
| 49 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) | |
| 5.0 | GENERAL CONSTRUCTION | 1) The feeder pillar frame shall be fabricated using suitable mild steel structural | |

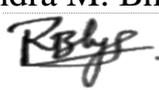
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section or pressed and shaped Cold Rolled Closed Annealed (CRCA) sheet of thickness 3 mm.

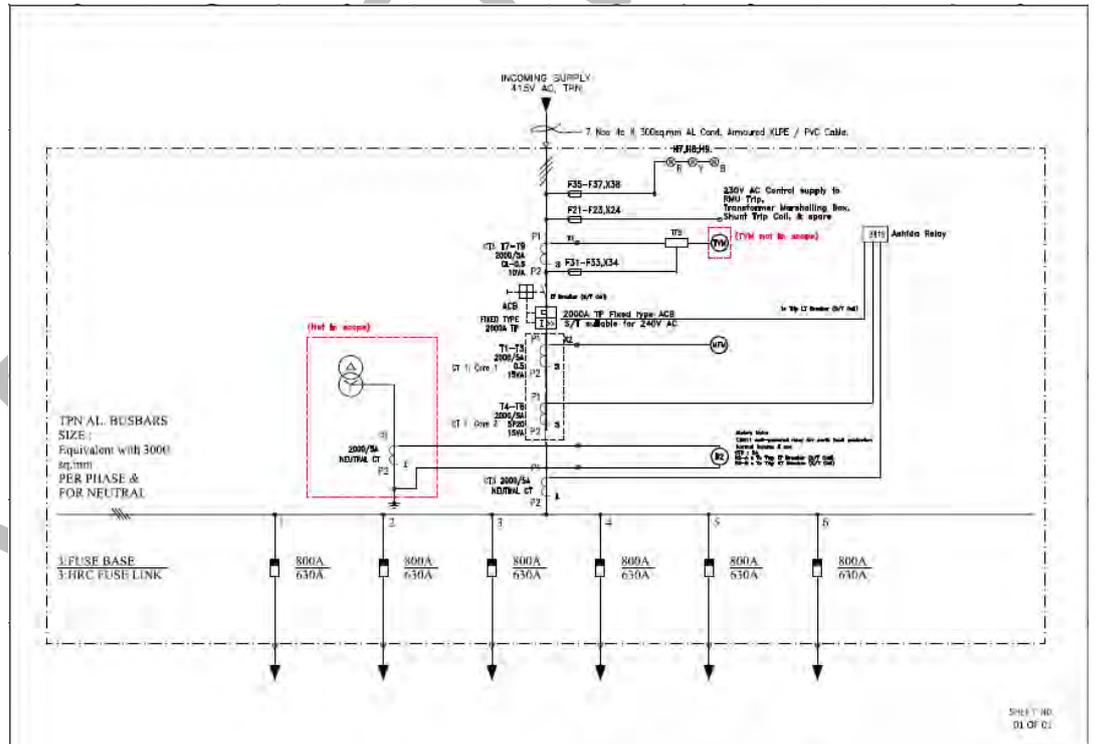
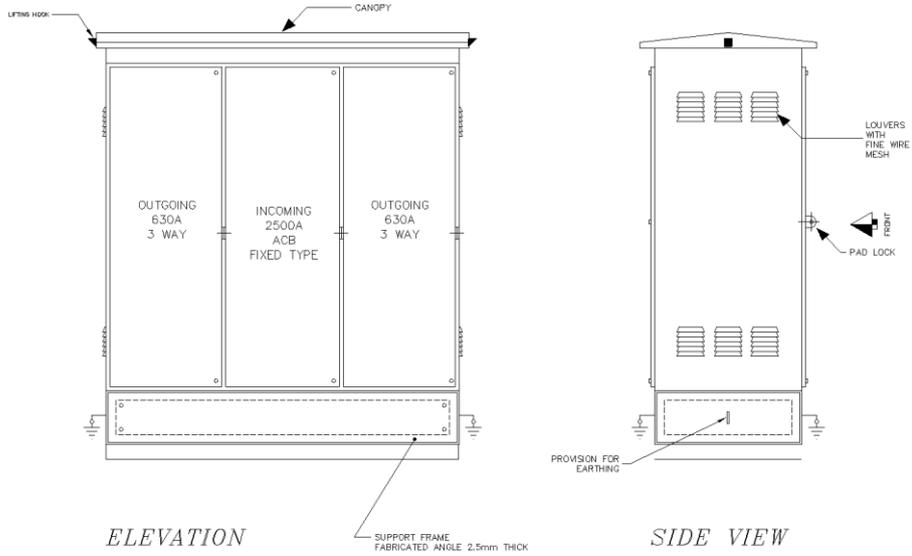
- 2) Frames shall be enclosed by CRCA sheet of thickness 3mm, smoothly finished, levelled and free from flaws. Doors and cover shall be made of CRCA sheet of thickness not less than 2.5mm. Stiffeners shall be provided, wherever necessary. Gland plates shall be of Hot Rolled Closed Annealed (HRCA) thickness not less than 3 mm. alternatively gland can also be provided between two angles so that removal of gland is easy. The dimension of base frame should be 75mm X 40mm X 5 mm.
- 3) The panel shall be of metal enclosed and outdoor type, support frame mounted type with canopy of adequate slope to avoid water accumulation. Degree of protection shall be IP 54.
- 4) Breaker compartment and fuse compartment should be separated by metallic sheet; the same should be split suitably in order to avoid local heating due to eddy currents generated by three phase bus bars crossing through the same sheet. The breaker compartment should be in center of panel & Outgoings shall be on both the sides of breaker compartment.
- 5) The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on sides and top portion. The louvers shall have fine wire mesh made of brass. The minimum depth of panel shall be 800 mm.
- 6) Labels on the front and rear indicating the panel designation, phase marking and danger signs shall be provided. Single Line Diagram & feeder details shall be engraved and pasted on inside of panel.
- 7) Danger boards shall be provided in local languages on the Hylam sheet below breaker and on front & rear cover with red background and with white letters.
- 8) Hinged doors of lift off type, with concealed type with brass type hinges and captive screws shall be provided on the front side & Back side. Adequate numbers of door hinges shall be provided and should be durable and easy in operation. All doors shall be provided with padlocking facility. The design of doors should permit inter-changeability. The back-side doors shall have nut and bolt arrangement. All Hinged doors shall be connected to the earth terminal with 2.5 Sq.mm braided copper wires.
- 9) Cable entry facilities at bottom of panel and removable gland plates of size suitable to accommodate incoming & outgoing cables of sizes, 4 Core 300 Sq mm 1.1 KV XLPE Cable, shall be provided at required locations.
- 10) Distance between Gland plate and cable termination of Air Circuit Breaker should be minimum 600mm.
- 11) The panel shall be provided with gasket all around the perimeter of covers, gland plates, removable covers and doors.
- 12) ACB termination shall be with tinned copper or tinned aluminium Bus Bar. Wherever required bimetallic washer to be provide, if bare copper terminal is provided.

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- 13) Busbars shall be of aluminium with Bakelite shrouding, rated for 2000 A, 50 kA for 1 sec and shall have adequate cross section to carry the rated continuous and short time current. Main Bus bar should be continuous/ without any joint. All bus bars, bus taps and joints shall be PVC taped. Neutral bus bar shall be provided on read side & rated for full bus bar rating.
- 14) **The ACBs shall be mechanical operated fixed type 3 Pole with shunt trip coil without any microprocessor protection release. Ashida make (ADR41S) relay to be provided for tripping the breaker with Overcurrent & earth fault protection. Spare ACB contacts for shunt trip should be provided.**
- 15) All fuses shall be of the HRC cartridge type mounted on plug-in type fuse bases having a prospective current of not less than 80 kA.
- 16) Phase to phase clearance of 25mm and Phase to Neutral / Earth clearance of 20mm shall be provided in the panel.
- 17) Distance between centre to centre should be minimum 150 mm between each fuse outlet and 125 mm between fuse outlet and body of panel to be maintained.
- 18) The panel shall be provided with two separate earthing terminals connected to earth bus.
- 19) All instruments shall be connected to the earth terminal using 650V grade PVC insulated 2.5 sq mm stranded tinned copper earthing conductor. All Earthing should be routed properly along with body of panel.
- 20) All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of braided copper conductors of adequate size. Flat earth bus should be protruded out for connection of external earth
- 21) Eyebolt of suitable sizes shall be provided for lifting arrangements.
- 22) All wiring shall be carried out with 650V grade PVC insulated stranded copper conductors of adequate sizes to suit the rated circuit current.
- 23) The panel shall be powder coated with light shade grade no 631 of IS 5.
- 24) Required number of foundation bolts shall be supplied with the panel.
- 25) Control fuses with control terminals for external cable connections shall be in the breaker chamber only.
- 26) The control terminals shall be as follows:
- Stud type with disconnecting facilities for CT circuits
 - Stud type for voltage and other circuits.
- 27) Fuse bases shall have adequate contact surface with the bus bars provided to ensure that no local heating takes place.
- 28) Lighting System in Feeder Pillar should be LED based.

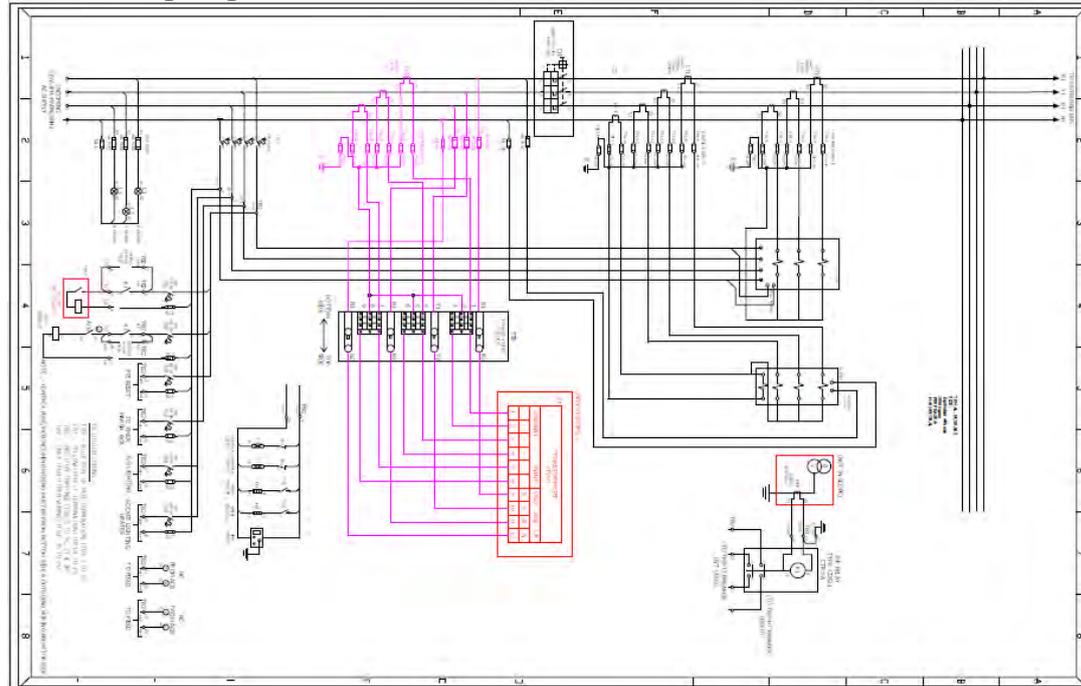
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6 Way LT Panel: Representative GA drawing & SLD-



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Control Wiring Diagram:



5.1

Specific Requirements

- a) The LT Panel should be 6 way type having 6 Nos. outlets per phase respectively as per tender requirement.
- b) Material Quality Plan, general arrangement drawing and single line diagram of the feeder pillar to be approved before manufacturing.
- c) Adequate cable termination shall be provided as follows

| Sr. No. | TYPE | UoM | No. of Cable | Description |
|---------|---------------------------------|--------------------|--------------|------------------------------------------------------|
| 1 | 2000A Incomers | 1No. | 7 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 2 | 6 Way Panel 630 A Fuse Outgoing | 6 No. Per outgoing | 2 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |

- d) 2000A Incomer shall be provided with resin cast CTs of ratio 2000/5A for metering & protection.
 - 3 nos dual core CT 2000A/5A, Core 1: 0.5 Cl, Core 2: 5P20, 15 VA, to be used for MFM.
 - 3 nos single core CT 2000A/5A, 0.5, 15 VA, to be used for Energy metering.
 - 1 no single core CT 2000A/5A, 5P20, 15 VA, to be used for neutral unbalance protection.

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e) All CT termination should be round plug type. No CT shorting arrangement to be provided. (As per SLD)

f) Secondary wiring shall be carried out with 1.1KV grade PVC insulated stranded copper conductor of 2.5 Sq. mm for CT circuits and 2.5 Sq. mm for PT and other circuits. All wires will be colour coded.

| Sr. No. | Equipment | Color | Nomenclature of TBs | Types of TBs |
|---------|-------------------------------|---------|---------------------|--------------|
| 1. | TBs of 4 Pole MCB Termination | Blue | TB2 | Droppable |
| 2. | TBs for CT Termination | Yellow | TB1 | Droppable |
| 3. | TBs for Tripping | Red | TB2 | Droppable |
| 4. | All others | Default | TB2 | Normal |

g) The feeder pillar panel shall be provided with Alstom Make CDG11 self-powered relay for earth fault protection. The relay type is normal inverse with 3 sec with E/F setting of 0.5 to 2 A.

h) Test terminal box for Energy Metering should be Front Connection, Screw Type (4SF), 50 A to be provided and the convention of the wiring in the TTB should be Incoming from the bottom side and outgoing to Meter from top side. There must not be any partition between Relay & metering box in LV compartment. It should be single door compartment. No lugs shall be provided for wires to meter, TTB, and Fuses (PT secondary). Sealing arrangement to be provided for Energy Meters. Inspection glass (Transparent Toughened Glass) to be provided for viewing of meter.

i) All Protection/ control wiring must terminate in LV compartment.

j) Provision to be provided for mounting the energy meter with max dimensions as L x B x D: 360 x 200 x 200 mm (Energy meter will be supplied by TPC). The relay and energy meter shall be installed in the breaker compartment with suitable partitions. The relays shall be supplied by the vendor.

k) The LT panel shall be equipped with shrouded type anti condensation space heaters with thermostat, internal light with switch & 5A/15A metal clad general-purpose plug socket.

l) The following separate control circuit 20A, 4 pole MCB duly wired up to terminal block for purchaser's use shall be provided before the circuit breaker in feeder pillars leading to following single pole MCB with neutral links (refer SLD):

Phase and neutral for 230V supply to RMU. (6A)

Phase and neutral for 230V supply to Transformer marshalling box. (6A)

Phase and neutral for external shunt trip coil (6A)

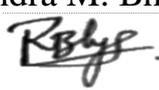
Phase and neutral for FPI reset (6A)

Separate 16A, DP MCB duly wired for Auxiliary supply for LT panel for following purpose,

Phase and neutral for substation lighting (6A)

Phase and neutral for Socket (15A)/ Heater circuit

Phase and neutral for Ashida overcurrent relay (4A)

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m) The following separate control fuses with neutral links duly wired out to a set of stud type link terminals for purchaser's use shall be provided before the circuit breaker in feeder pillars Control fuse Incoming wiring must be from bottom side & Outgoing wiring from top side. (refer SLD):

Three phase and neutral for metering circuit.

Three Phase and neutral for indication lamp

n) Locking should be of welded type. Earthing jumpers to be provided for all the doors. Louvers with stainless steel wire mesh to be provided on body side and cover plate.

o) Makes of various bought out items shall be limited to the following:

| Sr. No. | Items | Approved Make |
|---------|-------|---------------------------------------------|
| 1 | ACB | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton |
| 2. | CT | Reco/Newtek/Pragati/Kappa/ECS/Perfect Sales |

p) Flexible copper braiding should be provided on the doors. Neutral bus shall be connected with earth bus. All control cable should be multi stranded and FRLS. CT ISF should be less than or equal to 5. Close and Open status of the breaker should be available on SCADA through spare auxiliary contact and on LT panel through LED Lamp.

q) The fuses provide should be of knife type and same should be removable with the help of fuse puller. There shall be no obstruction during removal of outgoing fuses by fuse puller.

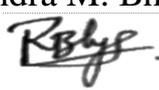
r) The safety locking facility to be provided for putting three nos. of safety locks.

s) Panel minimum width in mm: 800 mm

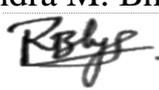
t) The breaker manufacturer to provide the complete support in terms of training; hand holding to our Testing and O&M staff. The breaker manufacturer to give the support service for next 10 years.

u) The robust isolating arrangement in the OG fuse compartment to be made.

6.0 NAME PLATE AND

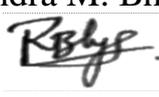
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| | MARKING | <p>6.1 Name plate- On front door top left side-showing</p> <ol style="list-style-type: none"> 1) Purchaser name & PO number. 2) Manufacturer name 3) Month / year of manufacturing 4) 'Property of Tata Power' <p>6.2 Marking for panel earth stud- Black letter 'E', on riveted Al label</p> <p>6.3 Danger board in English & local language, riveted on doors- White colour background with red lettering on 1.6mm thick Al plate.</p> <p>6.4 SLD shall be engraved & pasted on inside of door.</p> <p>6.5 CT Serial Nos., Ratio & ACB Serial Nos. to be written on doors with marker pen.</p> <p>6.6 Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown in Annexure-2.</p> |
| 7.0 | TESTS | <p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Feeder Pillar' in addition to others specified in IS/IEC standards.</p> <p>*In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid.</p> |
| 7.1 | Type test | <p>Type test - Only type tested components – ACBs, Fuses, Insulators & aluminium bus bar shall be accepted. Following type test shall be carried out on the assembly.</p> <ol style="list-style-type: none"> a) Verification of temperature-rise limits – Clause 8.2.1 of IS 8623 b) Verification of dielectric properties – Clause 8.2.2 of IS 8623 c) Verification of short-circuits strength – Clause 8.2.3 of IS 8623 d) Verification of continuity of the protective circuit – Clause 8.2.4 of IS 8623 e) Verification of clearance and creepage distances – Clause 8.2.5 of IS 8623 f) Verification of mechanical operation – Clause 8.2.6 of IS 8623 f) Verification of degree of protection – Clause 8.2.7 of IS 8623 |
| 7.2 | Routine test | <p>Acceptance & routine test- (Inspection test witness by purchaser as per approved Quality Assurance Plan)</p> <ol style="list-style-type: none"> 1) Visual inspection, dimension checks & paint thickness checks. 2) Bill of material check 3) Insulation resistance test 4) High voltage test 5) Operational check 6) Verification of dielectric properties 7) Tolerances on panel dimensions- Maximum +/- 5mm 8) No negative tolerance on bus bar dimensions & bus bar clearances 9) Stability test shall be conducted on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function. |
| 7.3 | Acceptance test | <ol style="list-style-type: none"> 1) Visual inspection & dimensional check 2) Verification of clearance and creepage distance 3) Paint thickness check 4) Wiring checks |

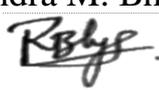
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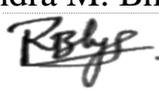
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| | | <p>5) Insulation resistance test</p> <p>6) HV test</p> <p>7) Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> <p>8) 1 unit from 1st lot shall be tested for Temperature rise test with ACB and fuses. (Bidder to arrange for the same, either in factory or in external lab)</p> |
| 8.0 | TYPE TEST CERTIFICATE | <p>The Bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. Type Test to be conducted on similar Design/ rating panel. All the tests shall be conducted at CPRI / ERDA/ NABL as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 10 years from the date of opening the bid.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> |
| 9.0 | PRE-DISPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY 's representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection.</p> <p>Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY.</p> <p>Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> Test reports MDCC issued by TATA POWER COMPANY Invoice in duplicate Packing list Drawings & catalogue Delivery Challan Other Documents (as applicable). |
| 10.0 | INSPECTION AFTER RECEIPT AT STORE | <p>The material received at TPC, Mumbai store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection or any other parameters observed after delivery.</p> <p>The material should be delivered at TPC, Mumbai stores within 45 days from the date of manufacturing, same shall be checked during delivery and overdue material shall not be</p> |

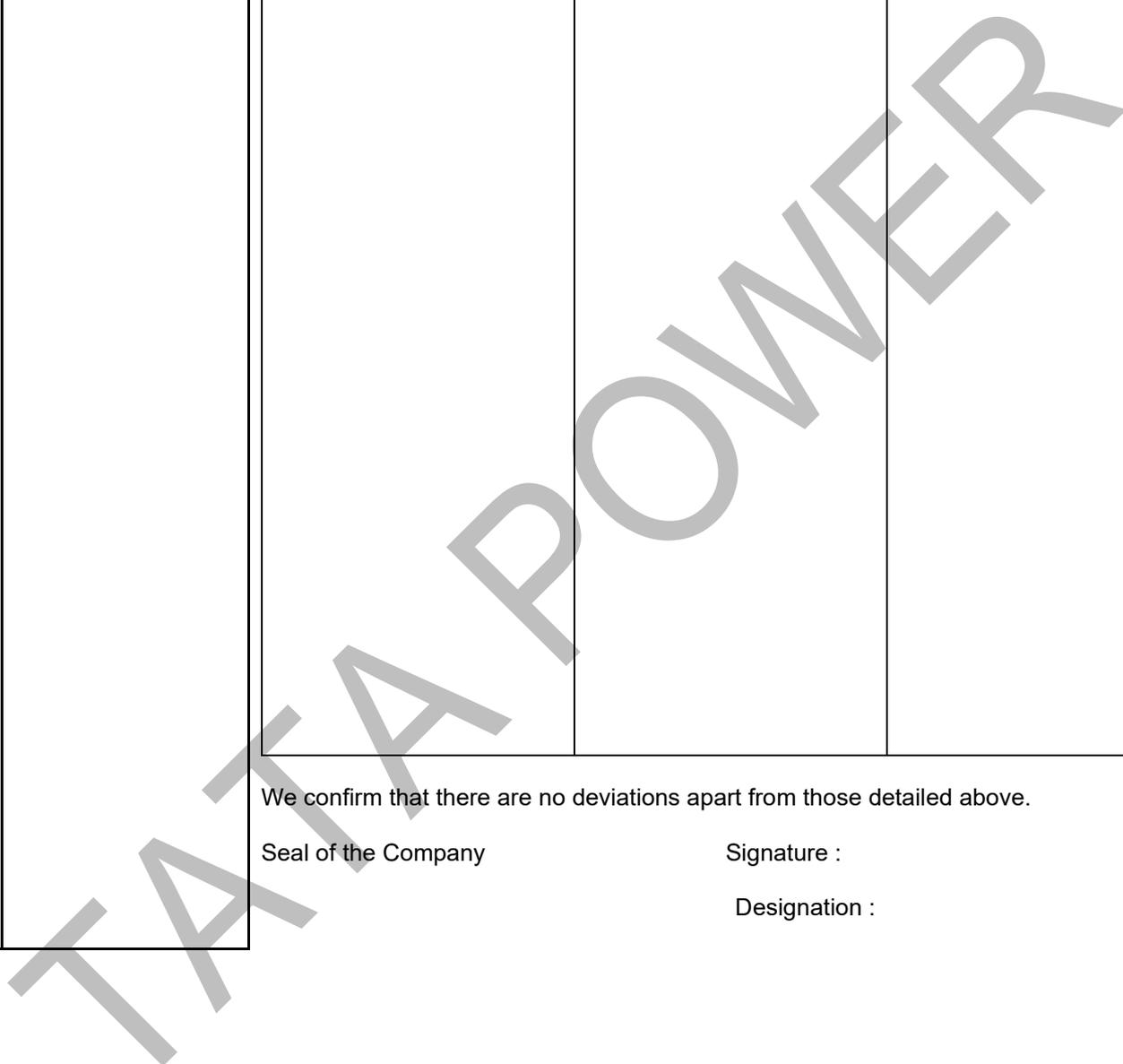
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| | | <p>accepted. Bidders to plan the delivery accordingly.</p> <p>Bidders to attend and rectify the same at his own cost. The material shall be accepted in stores only after rectification of any observed flaw. The delay in rectification shall lead to any contractual penalty.</p> <p>Billing shall be processed only after acceptance of the material.</p> |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract.</p> <p>In the event any defect is found by the TATA POWER COMPANY up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements) Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the TATA POWER COMPANY will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit.</p> <ol style="list-style-type: none"> 1) Packing protection- Against shocks, vibration & corrosion, damages during transportation 2) Packing identification labels, to show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number 3) Handling instruction- To be marked on packing boxes. 4) Bidders should prefer to use recyclable & environmentally friendly materials for packing. 5) No single use plastic to be used. 6) Packing should be done with environment friendly recyclable materials. |
| 13.0 | TENDER SAMPLE | Not Applicable |
| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test</p> |

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| | | <p>certificates submitted along with the Bid; the complete Lot shall be rejected.</p> <p>TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections.</p> <p>If anything missing in QAP and required as per other clauses of this document, bidder is liable to perform the same without cost implication.</p> |
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards and as specified above. |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). |
| 17.0 | SPARES, ACCESSORIES, AND TOOLS | Keys of door |
| 18.0 | DRAWING AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid. All the documents & drawings shall be in English language</p> <p>a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates g) Any other technical document, if required</p> |
| 19.0 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS | Bidders to comply for all above requirement of specifications clauses & submit signed and stamp copy as technical compliance document. |
| 20.0 | SCHEDULE "B" DEVIATIONS | <p>The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications.</p> <p>(TO BE ENCLOSED WITH THE BID)</p> <p>All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:</p> |

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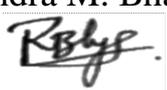
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We confirm that there are no deviations apart from those detailed above.

Seal of the Company

Signature :

Designation :

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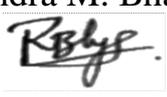
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Annexure – 1

Inspection Testing Plan

1. Visual inspection & dimensional check
2. Verification of clearance and creepage distance
3. Paint thickness check
4. Wiring checks
5. Insulation resistance test
6. HV test
7. Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function
8. 1 unit from 1st lot shall be tested for Temperature rise test with ACB and fuses. (Bidder to arrange for the same, either in factory or in external lab)

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Annexure – 2

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.

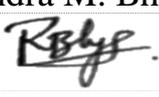


Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)



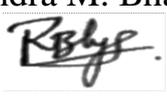
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| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/25 | 25/02/25 | 25/02/25 |

| | | |
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| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way 2000 A LT Panel |
| ENSE-DS-2032-R01 | | Date of Issue: 25/02/25 |

Annexure – 3

Reference drawings

TATA POWER

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|---------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/25 | 25/02/25 | 25/02/25 |

INCOMING SUPPLY
415V AC, TPN

7 Nos 4c X 300sq.mm AL Cond. Armoured XLPE / PVC Cable.

H7,H8,H9.

F35-F37,X38

F21-F23,X24

230V AC Control supply to
RMU Trip,
Transformer Marshalling Box,
Shunt Trip Coil, & spare

CT3 T7-T9
2000/5A
CL-0.5
10VA

P1

P2

X1

X2

X3

X4

X5

X6

X7

X8

X9

X10

X11

X12

X13

X14

X15

X16

X17

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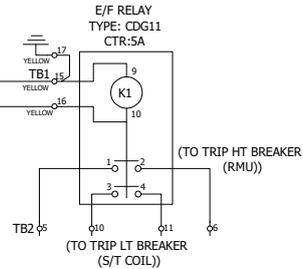
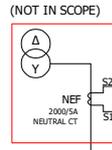
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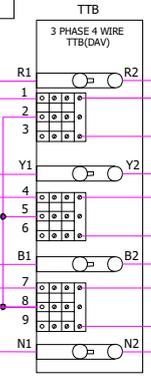
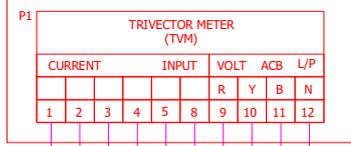
X319</

TO OUTGOING BUS
R1 Y1 B1 N1

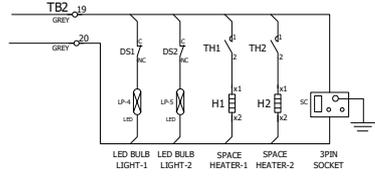
TPN AL BUSBARS
SIZE:
Equivalent with area
3000 sq.mm
PER PHASE &
FOR NEUTRAL



(NOT IN SCOPE)

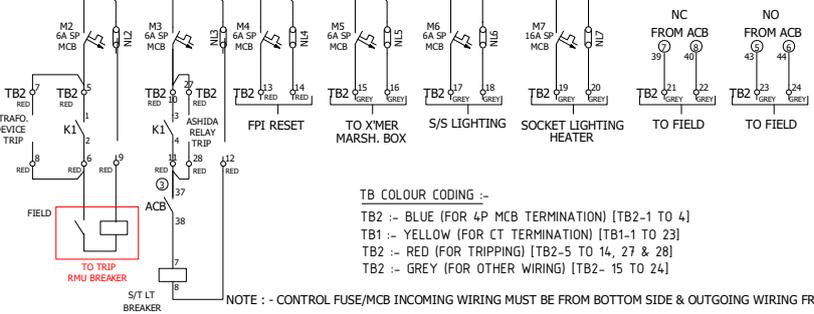
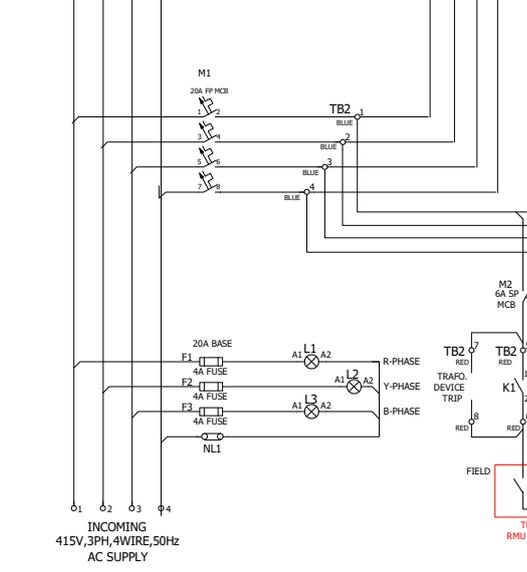
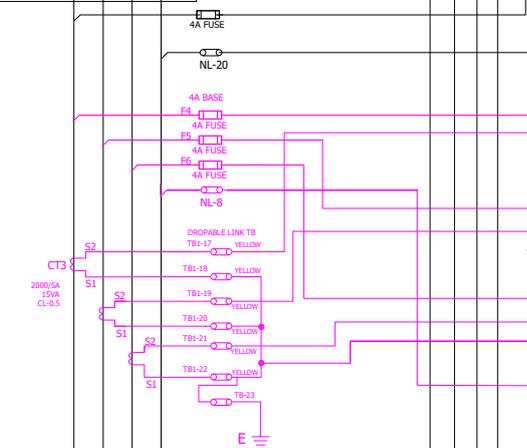
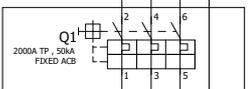
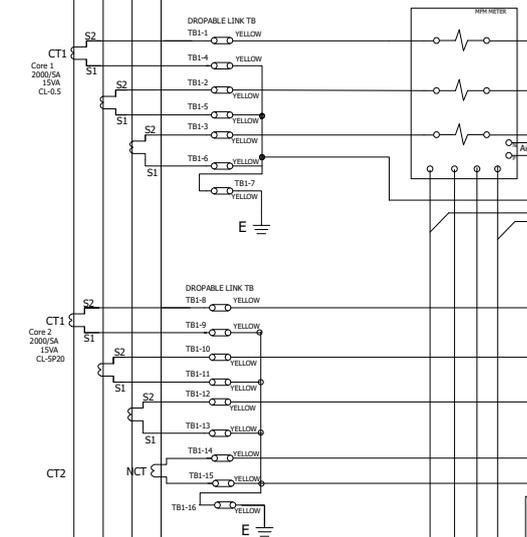


BOTTOM SIDE ← TOP SIDE



TB COLOUR CODING :-
TB2 :- BLUE (FOR 4P MCB TERMINATION) [TB2-1 TO 4]
TB1 :- YELLOW (FOR CT TERMINATION) [TB1-1 TO 23]
TB2 :- RED (FOR TRIPPING) [TB2-5 TO 14, 27 & 28]
TB2 :- GREY (FOR OTHER WIRING) [TB2- 15 TO 24]

NOTE :- CONTROL FUSE/MCB INCOMING WIRING MUST BE FROM BOTTOM SIDE & OUTGOING WIRING FROM TOP SIDE.



TECHNICAL SPECIFICATION

6 Way 1250 A LT Panel

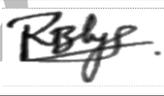
The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division,
Senapati Bapat Marg,
Lower Parel,
Mumbai – 400013
Maharashtra

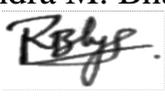
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| ENSE-DS-2031-R01 | | Date of Issue: 25/02/25 |

TECHNICAL SPECIFICATION COVER SHEET

Document No: ENSE-DS-2031-R01

Document Title: Technical SPECIFICATION OF 6 Way 1250 A LT Panels

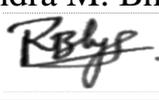
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|---------|------------------------------|------------|--|-------------|-----------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------|
| R01 | ENSE-DS-2031-R01 | 25/02/2025 | | YMM |  | AVP |  | RMB |  |
| R00 | ENSE-DS-2031-R00 | 11/01/2024 | | YMM |  | AVP |  | RMB |  |
| R0 | SPEC-NET-Feeder Pillar-1250A | 17/09/21 | | MY | -sd- | AVP | -sd- | RK | -sd- |
| Rev No. | Remarks | Date | | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | | Prepared By | | Reviewed By | | Approved & Issued By | |

| | | | |
|---------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

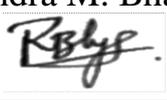
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|--------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------|
| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way 1250 A LT Panel |
| ENSE-DS-2031-R01 | | Date of Issue: 25/02/25 |

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| + ANNEXURE <u>1, 2 & 3</u> | |

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| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

| 1.0 | SCOPE | <p>This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V, 1250 A LT Panel with 6 no Outgoing Feeders complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai.</p> <p>It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall be capable of performing in a manner acceptable to the purchaser (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith.</p> <p>All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------|-----------------|---|---------|------------------------------------------|---|---------------------|----------------------------------------------------------------------------------------|---|------|-----------------------------|---|---------|-------------------------------------------------------------------------|---|---------|----------------------|---|---------|----------------------|---|------------|----------------------------------------------------------------------------------------------------------------|---|---------|-------------------|---|---------|------------------------|----|-------------------------|---------------------------------------|----|-----------|-------------------|
| 2.0 | APPLICABLE STANDARDS | <p>The equipment shall conform to this specification and latest revision of following codes with all amendments.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 25%;">Title</th> <th style="width: 70%;">Indian standard</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>IS 8623</td> <td>Specification for low voltage switchgear</td> </tr> <tr> <td style="text-align: center;">2</td> <td>IS 12063/ IEC 60529</td> <td>Classification of degrees of protection provided by Enclosures of Electrical equipment</td> </tr> <tr> <td style="text-align: center;">3</td> <td>IS 5</td> <td>Color of ready mixed paints</td> </tr> <tr> <td style="text-align: center;">4</td> <td>IS 5082</td> <td>Wrought Aluminium & Al alloy plates & sheets for electrical application</td> </tr> <tr> <td style="text-align: center;">5</td> <td>IS 2705</td> <td>Current Transformers</td> </tr> <tr> <td style="text-align: center;">6</td> <td>IS 2551</td> <td>Danger Notice plates</td> </tr> <tr> <td style="text-align: center;">7</td> <td>IS 13703-2</td> <td>Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons</td> </tr> <tr> <td style="text-align: center;">8</td> <td>IEC 255</td> <td>Protection Relays</td> </tr> <tr> <td style="text-align: center;">9</td> <td>IEC 801</td> <td>Control and monitoring</td> </tr> <tr> <td style="text-align: center;">10</td> <td>IEC 60947-2 /IS 13947-2</td> <td>Low Voltage Switchgear & control gear</td> </tr> <tr> <td style="text-align: center;">11</td> <td>IEC 60269</td> <td>Low Voltage Fuses</td> </tr> </tbody> </table> <p>In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid</p> | | Title | Indian standard | 1 | IS 8623 | Specification for low voltage switchgear | 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | 3 | IS 5 | Color of ready mixed paints | 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | 5 | IS 2705 | Current Transformers | 6 | IS 2551 | Danger Notice plates | 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | 8 | IEC 255 | Protection Relays | 9 | IEC 801 | Control and monitoring | 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | 11 | IEC 60269 | Low Voltage Fuses |
| | Title | Indian standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | IS 8623 | Specification for low voltage switchgear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | IS 12063/ IEC 60529 | Classification of degrees of protection provided by Enclosures of Electrical equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | IS 5 | Color of ready mixed paints | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for electrical application | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | IS 2705 | Current Transformers | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | IS 2551 | Danger Notice plates | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | IS 13703-2 | Low voltage fuses for voltage not exceeding 1000 V AC or 1500 V DC. Part 2 Fuses for use by authorized persons | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | IEC 255 | Protection Relays | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | IEC 801 | Control and monitoring | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | IEC 60947-2 /IS 13947-2 | Low Voltage Switchgear & control gear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | IEC 60269 | Low Voltage Fuses | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | CLIMATIC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

**CONDITIONS OF
THE
INSTALLATION**

| | | |
|----|---------------------------------------|--------------|
| 1 | Maximum ambient temperature | 43 deg.C |
| 2 | Max. Daily average ambient temp | 35 deg.C |
| 3 | Min Ambient Temperature | 07 deg.C |
| 4 | Maximum Relative Humidity | 100% |
| 5 | Minimum Relative Humidity | 40% |
| 6 | Average No. of thunderstorm per annum | 50 |
| 7 | Average Annual Rainfall | 2380mm |
| 8 | Average No. of rainy days per annum | 115 |
| 9 | Rainy months | June to Oct. |
| 10 | Altitude above MSL not exceeding | 300 meters |
| 11 | Average Air Pressure | 29.6-inch Hg |

Atmosphere is generally laden with mild acid and dust suspended during dry months and subjected to fog in cold months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.

4.0

**GENERAL
TECHNICAL
REQUIREMENTS**

| Sr. No | Item Description | Tata Power Requirement |
|--------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1 | Manufacturer | Name |
| | | Manufacturer Address |
| | | Contact telephone no |
| 2 | Breaker Rating (ACB) | 1250A Manual Fixed Type without any microprocessor relay. 230V AC Shunt tripping coil to be provided. |
| | Model of ACB | The Model shall be such that current density in current carrying part shall be less than 3 A/sq.mm. (Bidder to mention the model) |
| | Approved Make | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton |
| 3 | Main bus bar rating | 1250 A |
| | Bus bar Size for Phase & Neutral | 2000 sq.mm for Phase & Neutral |
| | Earth Bus | 1 x 50 x 10 mm GI |
| 4 | Type of Installation | Indoor/Outdoor Type |
| 5 | No of Incoming feeders | Qty - 1no. of 1250A ACB with 6 Nos of 4CX300 sq.mm Al Ar XLPE cables |
| 6 | No of outgoing feeders (6 Way) | Quantity - 6 Nos of 630A each with 2 no's of 4CX300 sq.mm Al Ar XLPE cables per O/G |
| 7 | Panel construction | CRCA sheet steel of thickness 3 mm |
| 8 | Panel enclosure class | IP54 - ingress protection |
| 9 | Sheet steel thickness | Doors & Covers - 2.5mm, FRAME - 3mm |

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& Date

R00

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Ajay V. Potdar

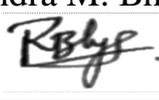
Ravindra M. Bhanage

25/02/2025

25/02/2025

25/02/2025

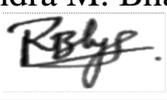
| | | | | |
|--|--|------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | 10 | Door type for front & rear access | Double door with rear door bolted |
| | | 11 | Door hinges | Minimum three anti-theft type hinges self-locking type |
| | | 12 | Padlocking facility | For front door |
| | | 13 | Master key for all doors | Identical for all panels, 1 no./ panel to be provided |
| | | 14 | Hardware & Fasteners | All Nuts, Bolts, Washers shall be Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. Bolts below 12 mm size shall be SS material. |
| | | 14a | Current Carrying part hardware | Each bolt on Bus Bar and Fuse terminal shall be provided with Belleville washer and plain washer. Wherever required bimetallic washers to be provided |
| | | 15 | Phase & neutral Bus bar | Aluminium grade 19501 (H2) as per IS 5082 |
| | | | Bus bar size in mm for 1250 A O/G | 2000 sq.mm for Phase & Neutral |
| | | | 1250A ACB Incoming | 2000 sq.mm for Phase & Neutral |
| | | | ACB O/G LINKS | 2000 sq.mm for Phase & Neutral (Dimensions as per feasibility with Breaker palm connection) |
| | | 16 | Bus bar colour coding for R, Y, B & neutral | Heat shrinkable sleeves with colour Red, Yellow, Blue & Black respectively |
| | | 16 a | Bus Bar Heat shrinkable sleeves | Cross-linked Polyolefin (Bidder to specify thickness) |
| | | 17 | Main bus bar short circuit withstand capacity | Above 50kA for 1 sec |
| | | 18 | Permissible maximum temperature rise above ambient of 50°C | Busbar: 45 deg C |
| | | | Permissible maximum temperature rise above ambient of 50°C | Terminals: 65 deg C |
| | | 19 | Bus bar support insulators | As per IS13410 SMC / DMC, 1100V grade |
| | | 20 | Incoming Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | | 21 | Outgoing Cable Size | 4C 300 Sq.mm Al Ar XLPE |
| | | 22 | Gland plate at panel bottom | HRCA MS 3mm thickness |
| | | 23 | Cable termination clearance | 600 mm minimum from gland plate & ACB |
| | | 24 | Fuse Base | 800 A |

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| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

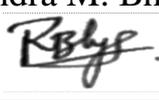
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| | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Bussmann / ABB |
| 25 | | Fuses (630 A) | HRC plug-in type gG (General Purpose, Fast acting fuse) |
| | | Approved Make | L&T / Siemens / Schneider / GE Power Control / Jean Muller /Bussmann / ABB |
| 26 | | CT's for 1250A Incoming Feeder | 7 Nos. Single resin cast. a) 3 no's dual core CT's of ratio 1250/5A <ul style="list-style-type: none"> • Core 1: Class 0.5 & 15VA burden – For MFM • Core 2: 5P20 & 15VA – For Ashida make O/C+E/F relay b) 3 no's single core CTs of ratio 1250/5 A, Class 0.5 & 15 VA for Energy meter (Energy meter is not in bidder scope) c) 1 no single core CT of ratio 1250/5A, 5P20 & 15 VA for Neutral unbalance protection Approved Make of CTs: Reco/Newtek/Pragati/Kappa/ECS/Adcon |
| 27 | | TTB for Metering | Front connection, Screw Type 3 Phase 4 Wire, 4SF, 50 A, DAV/IMP make |
| 28 | | Wiring convention for TTB | Incoming from Bottom Side & Outgoing to Meter from Top side |
| 29 | | Multifunction Digital meter | Should be communicable on Modbus RS 485 |
| 30 | | Earth Fault protection relay (NEF) | Alstom make CDG11 self-powered. Relay type is normal inverse with 3 Sec with E/F setting of 0.5 to 2 A |
| 31 | | Earthing Hardware | a) Earthing Nut and Bolt shall be M12 SS b) Washers shall be with Hot Dip Galvanized with 80 micron Galvanisation or Alu-Zinc coating. |
| 31a | | Panel Earthing | Earthing provision to be provided on both sides with 50 mm extension of main Earth Bus Bar. |
| 32 | | Clearance between live parts | Phase - phase -Minimum 25 mm & Phase - earth - Minimum 20 mm |
| 33 | | Distance between each fuse outlet | Centre to Centre - 150mm (Minimum) |
| 34 | | Distance between fuse outlet & panel surface | 125 mm (Minimum) |
| 35 | | Control terminals for CTs | Stud type with disconnecting |

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| | | | facilities |
| | 36 | Control terminals for Voltage & other circuits | Stud type |
| | 37 | Illumination and Indicating Bulb | LED |
| | 38 | Continuous rated operating voltage | 440 volt +/- 10% |
| | 39 | High voltage withstand capacity | 2000 volt at 50 Hz for 1minute |
| | 40 | Insulation resistance ph-ph & ph-earth | Minimum 10MOhm with 500V Megger |
| | 41 | Labels & name plates | As per Specifications |
| | 42 | Surface preparation for painting | Sand blasting or 7 tank process |
| | 43 | Painting | Sand blasting or 7 tank process. Light grey shade No 631 of IS-5 Powder coated epoxy paint min thickness 120 micron |
| | 44 | Power Supply Socket | 5A/15A Plug point socket to be provided |
| | 45 | Breaker Barrier | Breaker must have a metallic removable sheet from the front side which will act as a barrier between operator and the breaker. Provision must be given for breaker operation to be done through this barrier. |
| | 46 | Branding Plate | All supplied Units shall be fitted with engraved metallic logo of Tata Power on the front side. The Tata Power Co Ltd to be mentioned below the logo with clear font and Dimension 12*12 Inches. * Refer Annexure 2 |
| | 47 | Panel Dimensions (Max depth of 800 mm, Max length of 1800 mm) | L X D X H |
| | 48 | Numerical Relay | Ashida (ADR 241S) with 4 Element O/C & E/F Protection |
| | 49 | Bus-bar phase barriers/ Phase separators (R-Y & Y-B) | FRP insulating sheet - (to be placed near to the phase bus-bar) (min 3 mm thickness) shall be provided between bus-bars, so as to ensure that there is no accidental contact with any live parts. (65 mm width) |
| 5.0 | GENERAL CONSTRUCTION | 1) The feeder pillar frame shall be fabricated using suitable mild steel structural section or pressed and shaped Cold Rolled Closed Annealed (CRCA) sheet of thickness 3 mm. | |

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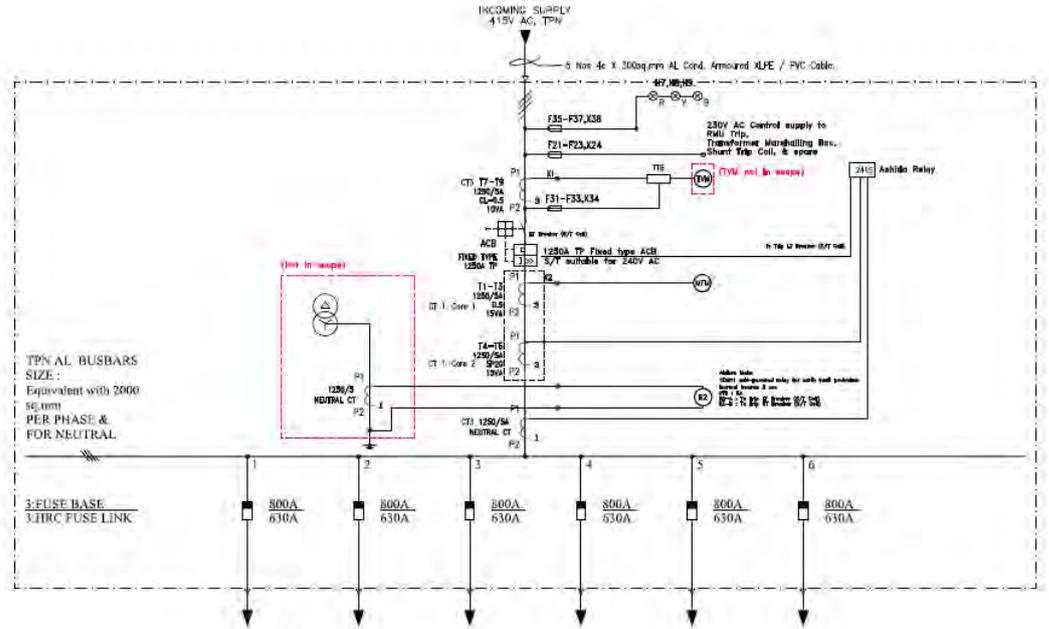
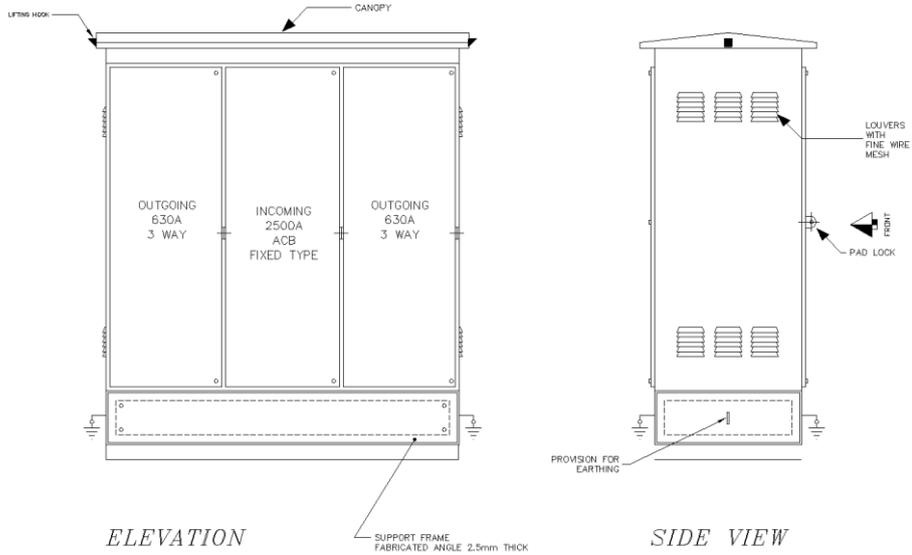
- 2) Frames shall be enclosed by CRCA sheet of thickness 3mm, smoothly finished, levelled and free from flaws. Doors and cover shall be made of CRCA sheet of thickness not less than 2.5mm. Stiffeners shall be provided, wherever necessary. pa. alternatively gland can also be provided between two angles so that removal of gland is easy. The dimension of base frame should be 75mm X 40mm X 5 mm.
- 3) The panel shall be of metal enclosed and outdoor type, support frame mounted type with canopy of adequate slope to avoid water accumulation. Degree of protection shall be IP 54.
- 4) Breaker compartment and fuse compartment should be separated by metallic sheet; the same should be split suitably in order to avoid local heating due to eddy currents generated by three phase bus bars crossing through the same sheet. The breaker compartment should be in center of panel & Outgoings shall be on both the sides of breaker compartment.
- 5) The panel shall be of dust and vermin proof construction and of self-cooled design with adequate louvers on sides and top portion. The louvers shall have fine wire mesh made of brass. The minimum depth of panel shall be 800 mm.
- 6) Labels on the front and rear indicating the panel designation, phase marking and danger signs shall be provided. Single Line Diagram & feeder details shall be engraved and pasted on inside of panel.
- 7) Danger boards shall be provided in local languages on the Hylam sheet below breaker and on front & rear cover with red background and with white letters.
- 8) Hinged doors of lift off type, with concealed type with brass type hinges and captive screws shall be provided on the front side & Back side. Adequate numbers of door hinges shall be provided and should be durable and easy in operation. All doors shall be provided with padlocking facility. The design of doors should permit inter-changeability. The back-side doors shall have nut and bolt arrangement. All Hinged doors shall be connected to the earth terminal with 2.5 Sq.mm braided copper wires.
- 9) Cable entry facilities at bottom of panel and removable gland plates of size suitable to accommodate incoming & outgoing cables of sizes, 4 Core 300 Sq mm 1.1 KV XLPE Cable, shall be provided at required locations.
- 10) Distance between Gland plate and cable termination of Air Circuit Breaker should be minimum 600mm.
- 11) The panel shall be provided with gasket all around the perimeter of covers, gland plates, removable covers and doors.
- 12) ACB termination shall be with tinned copper or tinned aluminium Bus Bar. Wherever required bimetallic washer to be provide, if bare copper terminal is provided.
- 13) Busbars shall be of aluminium with Bakelite shrouding, rated for 1250 A, 50 kA for 1 sec and shall have adequate cross section to carry the rated continuous and short time current. Main Bus bar should be continuous/ without any joint. All bus bars, bus taps and joints shall be PVC taped. Neutral bus bar shall be provided on read side & rated for full bus bar rating.

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- 14) The ACBs shall be mechanical operated fixed type 3 Pole with shunt trip coil without any microprocessor protection release. Ashida make (ADR41S) relay to be provided for tripping the breaker with Overcurrent & earth fault protection. Spare ACB contacts for shunt trip should be provided.
- 15) All fuses shall be of the HRC cartridge type mounted on plug-in type fuse bases having a prospective current of not less than 80 kA.
- 16) Phase to phase clearance of 25mm and Phase to Neutral / Earth clearance of 20mm shall be provided in the panel.
- 17) Distance between centre to centre should be minimum 150 mm between each fuse outlet and 125 mm between fuse outlet and body of panel to be maintained.
- 18) The panel shall be provided with two separate earthing terminals connected to earth bus.
- 19) All instruments shall be connected to the earth terminal using 650V grade PVC insulated 2.5 sq mm stranded tinned copper earthing conductor. All Earthing should be routed properly along with body of panel.
- 20) All hinged doors, Covers, Gland Plates shall be connected to the earth terminal, with the help of braided copper conductors of adequate size. Flat earth bus should be protruded out for connection of external earth
- 21) Eyebolt of suitable sizes shall be provided for lifting arrangements.
- 22) All wiring shall be carried out with 650V grade PVC insulated stranded copper conductors of adequate sizes to suit the rated circuit current.
- 23) The panel shall be powder coated with light shade grade no 631 of IS 5.
- 24) Required number of foundation bolts shall be supplied with the panel.
- 25) Control fuses with control terminals for external cable connections shall be in the breaker chamber only.
- 26) The control terminals shall be as follows:
- Stud type with disconnecting facilities for CT circuits
 - Stud type for voltage and other circuits.
- 27) Fuse bases shall have adequate contact surface with the bus bars provided to ensure that no local heating takes place.
- 28) Lighting System in Feeder Pillar should be LED based.

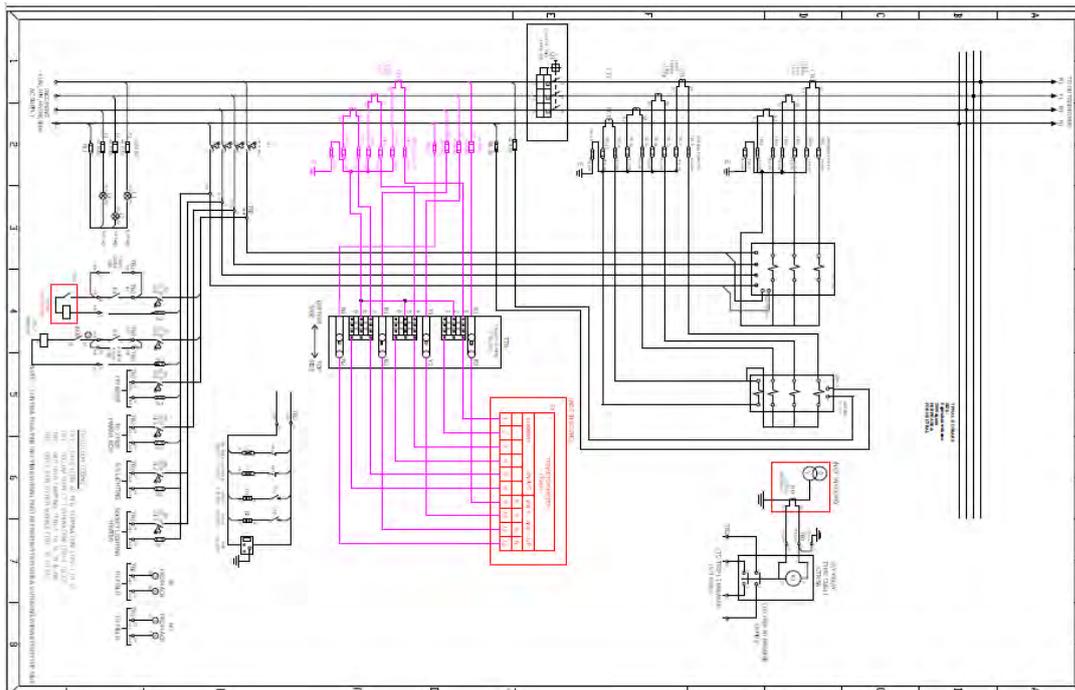
6 Way LT Panel: Representative GA drawing & SLD-

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Control Wiring Diagram:



5.1

Specific Requirements

- a) The LT Panel should be 6 way type having 6 Nos. outlets per phase respectively as per tender requirement.
- b) Material Quality Plan, general arrangement drawing and single line diagram of the feeder pillar to be approved before manufacturing.
- c) Adequate cable termination shall be provided as follows

| Sr. No. | TYPE | UoM | No. of Cable | Description |
|---------|---------------------------------|--------------------|--------------|------------------------------------------------------|
| 1 | 1250A Incomers | 1No. | 6 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |
| 2 | 6 Way Panel 630 A Fuse Outgoing | 6 No. Per outgoing | 2 | 1.1KV, 4C, 300 sqmm AL cond. Armoured XLPE/PVC Cable |

- d) 1250A Incomer shall be provided with resin cast CTs of ratio 1250/5A for metering & protection.
 - 3 no's dual core CT 1250A/5A, Core 1: 0.5 CI, Core 2: 5P20, 15 VA, to be used for MFM.
 - 3 no's single core CT 1250A/5A, 0.5, 15 VA, to be used for Energy metering.
 - 1 no single core CT 1250A/5A, 5P20, 15 VA, to be used for neutral unbalance

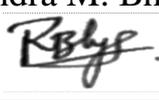
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protection.

- e) All CT termination should be round plug type. No CT shorting arrangement to be provided. (As per SLD)
- f) Secondary wiring shall be carried out with 1.1KV grade PVC insulated stranded copper conductor of 2.5 Sq. mm for CT circuits and 2.5 Sq. mm for PT and other circuits. All wires will be colour coded.

| Sr. No. | Equipment | Colour | Nomenclature of TBs | Types of TBs |
|---------|-------------------------------|---------|---------------------|--------------|
| 1. | TBs of 4 Pole MCB Termination | Blue | TB2 | Droppable |
| 2. | TBs for CT Termination | Yellow | TB1 | Droppable |
| 3. | TBs for Tripping | Red | TB2 | Droppable |
| 4. | All others | Default | TB2 | Normal |

- g) The feeder pillar panel shall be provided with Alstom Make CDG11 self-powered relay for earth fault protection. The relay type is normal inverse with 3 sec with E/F setting of 0.5 to 2 A.
- h) Test terminal box for Energy Metering should be Front Connection, Screw Type (4SF), 50 A to be provided and the convention of the wiring in the TTB should be Incoming from the bottom side and outgoing to Meter from top side. There must not be any partition between Relay & metering box in LV compartment. It should be single door compartment. No lugs shall be provided for wires to meter, TTB, and Fuses (PT secondary). Sealing arrangement to be provided for Energy Meters. Inspection glass (Transparent Toughened Glass) to be provided for viewing of meter.
- i) All Protection/ control wiring must terminate in LV compartment.
- j) Provision to be provided for mounting the energy meter with max dimensions as L x B x D: 360 x 200 x 200 mm (Energy meter will be supplied by TPC). The relay and energy meter shall be installed in the breaker compartment with suitable partitions. The relays shall be supplied by the vendor.
- k) The LT panel shall be equipped with shrouded type anti condensation space heaters with thermostat, internal light with switch & 5A/15A metal clad general-purpose plug socket.
- l) The following separate control circuit 20A, 4 pole MCB duly wired up to terminal block for purchaser's use shall be provided before the circuit breaker in feeder pillars leading to following single pole MCB with neutral links (refer SLD):

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Phase and neutral for 230V supply to RMU. (6A)
 Phase and neutral for 230V supply to Transformer marshalling box. (6A)
 Phase and neutral for external shunt trip coil (6A)
 Phase and neutral for FPI reset (6A)
 Separate 16A, DP MCB duly wired for Auxiliary supply for LT panel for following purpose,
 Phase and neutral for substation lighting (6A)
 Phase and neutral for Socket (15A)/ Heater circuit
 Phase and neutral for Ashida overcurrent relay (4A)

m) The following separate control fuses with neutral links duly wired out to a set of stud type link terminals for purchaser's use shall be provided before the circuit breaker in feeder pillars Control fuse Incoming wiring must be from bottom side & Outgoing wiring from top side. (refer SLD):

Three phase and neutral for metering circuit.
 Three Phase and neutral for indication lamp

n) Locking should be of welded type. Earthing jumpers to be provided for all the doors. Louvers with stainless steel wire mesh to be provided on body side and cover plate.

o) Makes of various bought out items shall be limited to the following:

| Sr. No. | Items | Approved Make |
|---------|-------|---------------------------------------------|
| 1 | ACB | Schneider/ L&T/ Siemens/ C&S/ ABB/ Eaton |
| 2. | CT | Reco/Newtek/Pragati/Kappa/ECS/Perfect Sales |

p) Flexible copper braiding should be provided on the doors. Neutral bus shall be connected with earth bus. All control cable should be multi stranded and FRLS. CT ISF should be less than or equal to 5. Close and Open status of the breaker should be available on SCADA through spare auxiliary contact and on LT panel through LED Lamp.

q) The fuses provide should be of knife type and same should be removable with the help of fuse puller. There shall be no obstruction during removal of outgoing fuses by fuse puller.

r) The safety locking facility to be provided for putting three nos. of safety locks.

s) Panel minimum width in mm: 800 mm

t) The breaker manufacturer to provide the complete support in terms of training; hand holding to our Testing and O&M staff. The breaker manufacturer to give the support service for next 10 years.

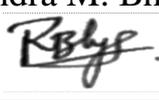
u) The robust isolating arrangement in the OG fuse compartment to be made as per the

6.0

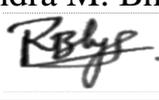
NAME PLATE AND MARKING

6.1 Name plate- On front door top left side-showing

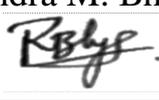
- 1) Purchaser name & PO number.
- 2) Manufacturer name
- 3) Month / year of manufacturing
- 4) 'Property of Tata Power'

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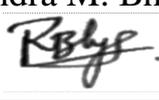
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| | | <p>6.2 Marking for panel earth stud- Black letter 'E', on riveted Al label</p> <p>6.3 Danger board in English & local language, riveted on doors- White colour background with red lettering on 1.6mm thick Al plate.</p> <p>6.4 SLD shall be engraved & pasted on inside of door.</p> <p>6.5 CT Serial Nos., Ratio & ACB Serial Nos. to be written on doors with marker pen.</p> <p>6.6 Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown in Annexure-2.</p> |
| 7.0 | TESTS | <p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. Following tests shall be necessarily conducted on the 'Feeder Pillar' in addition to others specified in IS/IEC standards.</p> <p>*In case of any conflict on any technical particular, the stricter requirement mentioned in the relevant standard shall be valid.</p> |
| 7.1 | Type test | <p>Type test - Only type tested components – ACBs, Fuses, Insulators & aluminium bus bar shall be accepted. Following type test shall be carried out on the assembly.</p> <p>a) Verification of temperature-rise limits – Clause 8.2.1 of IS 8623 b) Verification of dielectric properties – Clause 8.2.2 of IS 8623 c) Verification of short-circuits strength – Clause 8.2.3 of IS 8623 d) Verification of continuity of the protective circuit – Clause 8.2.4 of IS 8623 e) Verification of clearance and creepage distances – Clause 8.2.5 of IS 8623 f) Verification of mechanical operation – Clause 8.2.6 of IS 8623 f) Verification of degree of protection – Clause 8.2.7 of IS 8623</p> |
| 7.2 | Routine test | <p>Acceptance & routine test- (Inspection test witness by purchaser as per approved Quality Assurance Plan)</p> <p>1) Visual inspection, dimension checks & paint thickness checks. 2) Bill of material check 3) Insulation resistance test 4) High voltage test 5) Operational check 6) Verification of dielectric properties 7) Tolerances on panel dimensions- Maximum +/- 5mm 8) No negative tolerance on bus bar dimensions & bus bar clearances 9) Stability test shall be conducted on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> |
| 7.3 | Acceptance test | <p>1) Visual inspection & dimensional check 2) Verification of clearance and creepage distance 3) Paint thickness check 4) Wiring checks 5) Insulation resistance test 6) HV test 7) Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function.</p> |

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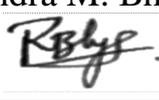
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| | | 8) 1 unit from 1st lot shall be tested for Temperature rise test with ACB and fuses. (Bidder to arrange for the same, either in factory or in external lab) |
| 8.0 | TYPE TEST CERTIFICATE | <p>The Bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. Type Test to be conducted on similar Design/ rating panel. All the tests shall be conducted at CPRI / ERDA/ NABL as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 10 years from the date of opening the bid.</p> <p>Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product.</p> <p>In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER.</p> |
| 9.0 | PRE-DISPATCH INSPECTION | <p>The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY's representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection.</p> <p>Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY.</p> <p>Five certified copies of all test certificates including type tests, sample test certificates shall be sent to us for our approval prior to dispatch of materials.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> Test reports MDCC issued by TATA POWER COMPANY Invoice in duplicate Packing list Drawings & catalogue Delivery Challan Other Documents (as applicable). |
| 10.0 | INSPECTION AFTER RECEIPT AT STORE | <p>The material received at TPC, Mumbai store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection or any other parameters observed after delivery.</p> <p>The material should be delivered at TPC, Mumbai stores within 45 days from the date of manufacturing, same shall be checked during delivery and overdue material shall not be accepted. Bidders to plan the delivery accordingly.</p> <p>Bidders to attend and rectify the same at his own cost. The material shall be accepted in stores only after rectification of any observed flaw. The delay in rectification shall lead to any contractual penalty.</p> |

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| | | Billing shall be processed only after acceptance of the material. |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract.</p> <p>In the event any defect is found by the TATA POWER COMPANY up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements) Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the TATA POWER COMPANY will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING AND TRANSPORT | <p>Bidder shall ensure that the item covered under this specification shall be packaged for rail/road transport in a manner so as to protect the equipment from damage in transit.</p> <ol style="list-style-type: none"> 1) Packing protection- Against shocks, vibration & corrosion, damages during transportation 2) Packing identification labels, to show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number 3) Handling instruction- To be marked on packing boxes. 4) Bidders should prefer to use recyclable & environmentally friendly materials for packing. 5) No single use plastic to be used. 6) Packing should be done with environment friendly recyclable materials. |
| 13.0 | TENDER SAMPLE | Not Applicable |
| 14.0 | QUALITY CONTROL | <p>The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished.</p> <p>TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected.</p> <p>TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections.</p> <p>If anything missing in QAP and required as per other clauses of this document, bidder is</p> |

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| | | liable to perform the same without cost implication. | | | | | | |
|--------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|------------------------------------------|--|--|--|
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards and as specified above. | | | | | | |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). | | | | | | |
| 17.0 | SPARES, ACCESSORIES, AND TOOLS | Keys of door | | | | | | |
| 18.0 | DRAWING AND DOCUMENTS | <p>Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid.</p> <p>All the documents & drawings shall be in English language</p> <p>a) Completely filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates</p> | | | | | | |
| 19.0 | SCHEDULE "A" GUARANTEED TECHNICAL PARTICULARS | Bidders to comply for all above requirement of specifications clauses & submit signed and stamp copy as technical compliance document. | | | | | | |
| 20.0 | SCHEDULE "B" DEVIATIONS | <p>The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the purchaser's specifications.</p> <p>(TO BE ENCLOSED WITH THE BID)</p> <p>All deviations from this specification shall be set out by the bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:</p> <table border="1"> <thead> <tr> <th>Sr.No.</th> <th>Clause No.</th> <th>Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> | Sr.No. | Clause No. | Details of deviation with justifications | | | |
| Sr.No. | Clause No. | Details of deviation with justifications | | | | | | |
| | | | | | | | | |

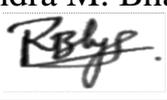
| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| R00 | Yash M. Mane  25/02/2025 | Ajay V. Potdar  25/02/2025 | Ravindra M. Bhanage  25/02/2025 |

| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|

We confirm that there are no deviations apart from those detailed above.

Seal of the Company Signature :

Designation :

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| R00 | Yash M. Mane  25/02/2025 | Ajay V. Potdar  25/02/2025 | Ravindra M. Bhanage  25/02/2025 |

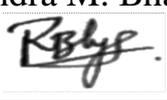
| | | |
|--------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------|
| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way 1250 A LT Panel |
| ENSE-DS-2031-R01 | | Date of Issue: 25/02/25 |

Annexure – 1

Inspection Testing Plan

1. Visual inspection & dimensional check
2. Verification of clearance and creepage distance
3. Paint thickness check
4. Wiring checks
5. Insulation resistance test
6. HV test
7. Stability test on all Panels, to ensure there shall be no tripping in case of unbalance current on earth fault function
8. 1 unit from 1st lot shall be tested for Temperature rise test with ACB and fuses. (Bidder to arrange for the same, either in factory or in external lab)

TATA POWER

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

Annexure – 2

Tata power Branding Name plate -

Separate metallic name plate with Tata Power Logo of Dimension 12*12 Inches in clear font as shown below.

Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.

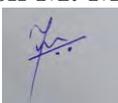
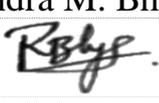


Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)



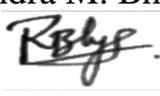
| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

| | | |
|--------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------|
| The Tata Power Company Limited |  | TECHNICAL SPECIFICATION OF 6 Way 1250 A LT Panel |
| ENSE-DS-2031-R01 | | Date of Issue: 25/02/25 |

Annexure – 3

Reference drawings

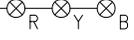
TATA POWER

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R00 | Yash M. Mane  | Ajay V. Potdar  | Ravindra M. Bhanage  |
| | 25/02/2025 | 25/02/2025 | 25/02/2025 |

INCOMING SUPPLY
415V AC, TPN

5 Nos 4c X 300sq.mm AL Cond. Armoured XLPE / PVC Cable.

H7,H8,H9.



F35-F37,X38

F21-F23,X24

230V AC Control supply to
RMU Trip,
Transformer Marshalling Box,
Shunt Trip Coil, & spare

CT3 T7-T9
1250/5A
CL-0.5
10VA

P1

P2

X1

3 F31-F33,X34

TTB



(TVM not in scope)

241S

Ashida Relay

LT Breaker (S/T Coil)

ACB

FIXED TYPE
1250A TP

X2

P1

P2

T1-T3
1250/5A
0.5
15VA
CT 1: Core 1



To Trip LT Breaker (S/T Coil)

T4-T6
1250/5A
5P20
15VA
CT 1: Core 2

P1

P2

Alatom Make
CDG11 self-powered relay for earth fault protection
Normal Inverse 3 sec
CTR : 5A
R2-A : To Trip LT Breaker (S/T Coil)
R2-B : To Trip HT Breaker (S/T Coil)



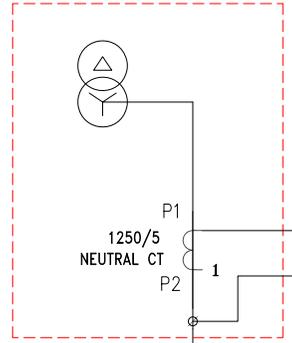
CT3 1250/5A
NEUTRAL CT

P1

P2

1

(Not in scope)



1250/5
NEUTRAL CT

P1

P2

1

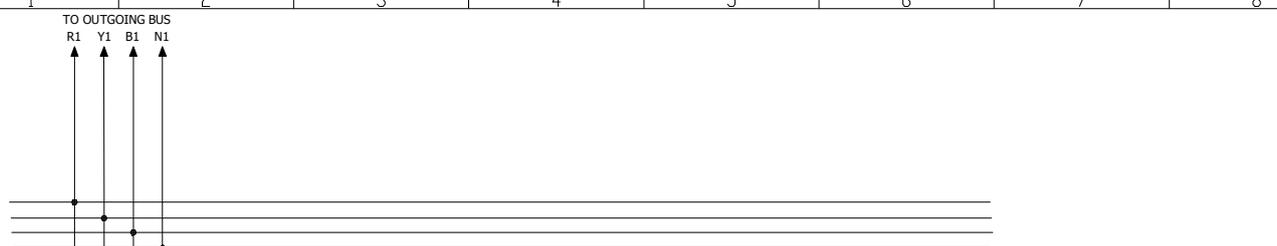
TPN AL. BUSBARS
SIZE :
Equivalent with 2000
sq.mm
PER PHASE &
FOR NEUTRAL



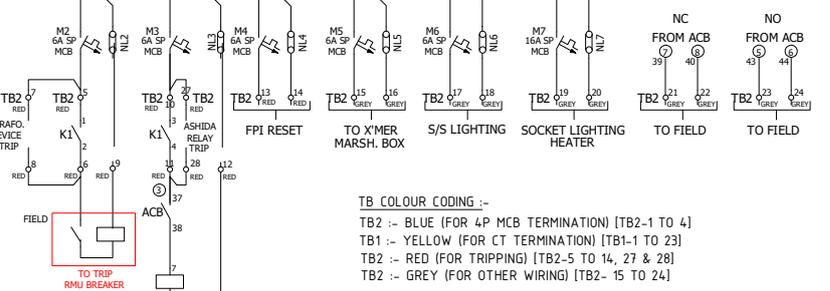
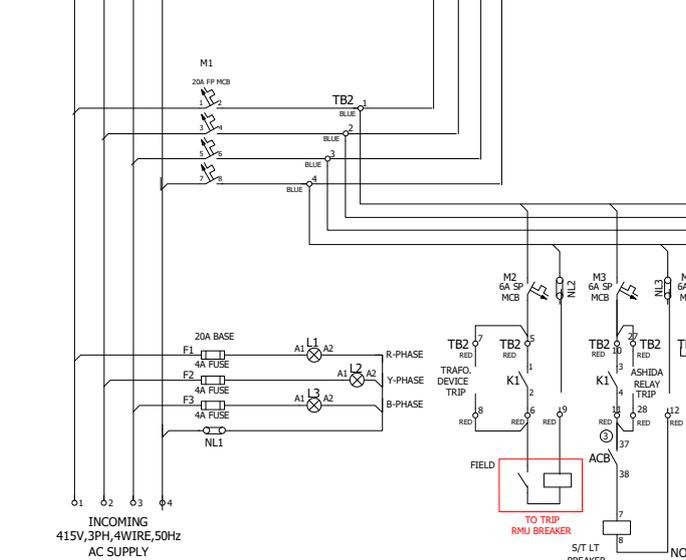
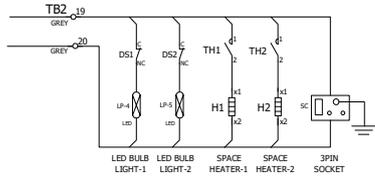
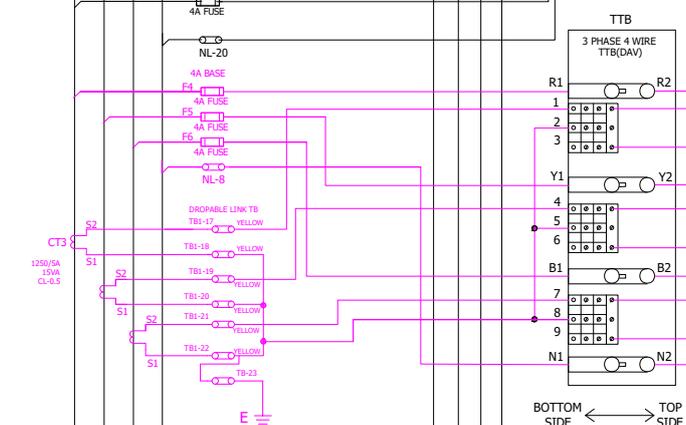
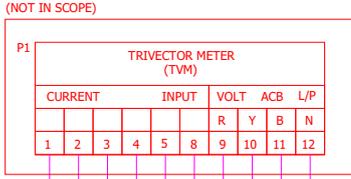
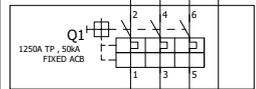
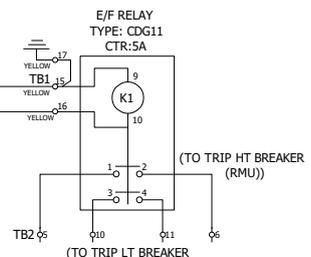
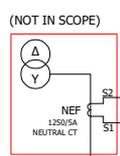
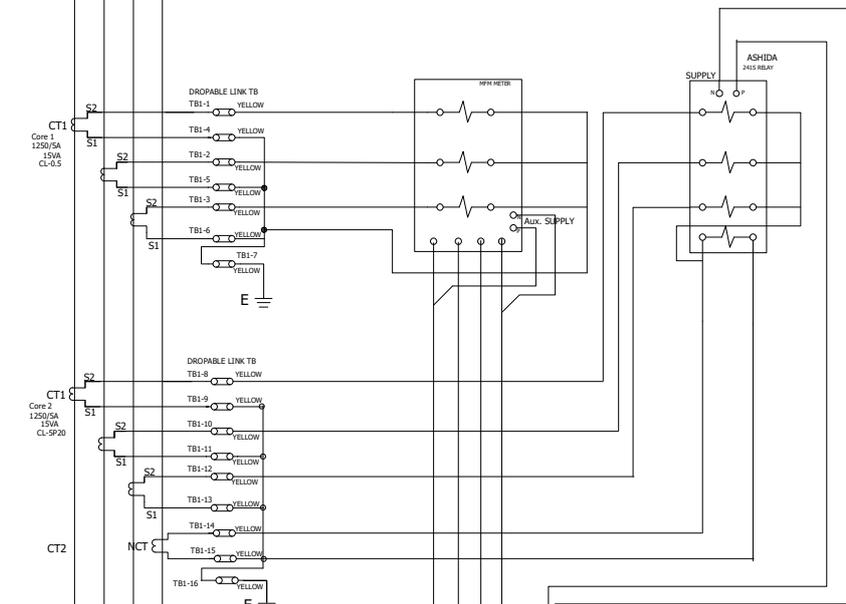
3:FUSE BASE
3:HRC FUSE LINK

| | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 800A 630A | 800A 630A | 800A 630A | 800A 630A | 800A 630A | 800A 630A |





TPN AL. BUSBARS
SIZE :
Equivalent with area
3000 sq.mm
PER PHASE &
FOR NEUTRAL.



TB COLOUR CODING :-
TB2 :- BLUE (FOR 4P MCB TERMINATION) [TB2-1 TO 4]
TB1 :- YELLOW (FOR CT TERMINATION) [TB1-1 TO 23]
TB2 :- RED (FOR TRIPPING) [TB2-5 TO 14, 27 & 28]
TB2 :- GREY (FOR OTHER WIRING) [TB2- 15 TO 24]

NOTE :- CONTROL FUSE/MCB INCOMING WIRING MUST BE FROM BOTTOM SIDE & OUTGOING WIRING FROM TOP SIDE.



| | | |
|-----------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH FUSE UNIT METERING PANEL WITHOUT CT |
| ENSE-DS-2026-R01 | | Date of Issue: 20/09/2024 |

TECHNICAL SPECIFICATION

Switch Fuse Unit Metering Panel without CT

**(Rating- 63A, 100A, 125A, 160A, 200A, 250A,
400A, 630A, 800A)**

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division, Senapati Bapat Marg,
Lower Parel, Mumbai – 400013 Maharashtra

| | | |
|----------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------|
| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH FUSE UNIT METERING PANEL WITHOUT CT |
| ENSE-DS-2026-R01 | | Date of Issue: 20/09/2024 |

Document No: ENSE-DS-2026-R01

Document Title: Technical specifications for Switch Fuse Unit Metering Panel without CT

| 01 | For tender purpose(ENSE-DS-2026-R01) | 20/9/24 | KSJ |  | AVP |  | RMB |  |
|---------|--------------------------------------|----------|-------------|-----------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|
| 00 | For tender purpose(ENSE-DS-2026-R00) | 2/1/24 | KSJ |  | AVP |  | RMB |  |
| R5 | D-NPCE-SPEC-14 | 05/01/22 | SS | -SD- | Vikas Koul | -SD- | Vikas Koul | -SD- |
| R4 | D-NPCE-SPEC-14 | 31/3/20 | AS | -SD- | SBK | -SD- | NCP | -SD- |
| R3 | D-NPCE-SPEC-14 | 23/5/19 | ND | -SD- | | | NCP | -SD- |
| R2 | D-NPCE-SPEC-14 | 3/11/18 | ND | -SD- | | | NCP | -SD- |
| R1 | D-NPCE-SPEC-14 | 13/10/16 | ND | -SD- | | | CKC | -SD- |
| R0 | D-NPCE-SPEC-14 | 17/2/16 | AP | -SD- | | | CKC | -SD- |
| Rev No. | Remarks | Date | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | Prepared By | | Checked By | | Approved and Issued By | |

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division, Senapati Bapat Marg,
Lower Parel, Mumbai – 400013 Maharashtra

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R01 |  Ketan S. Jadhav |  Ajay V. Potdar |  Ravindra M. Bhanage |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

| | | |
|----------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH FUSE UNIT METERING PANEL WITHOUT CT |
| ENSE-DS-2026-R01 | | Date of Issue: 20/09/2024 |

CHECK LIST – NEW or REVISION OF OLD SPECIFICATION

Document No: ENSE-DS-2026-R01

Revision No.: 01

Document Title: **Technical specifications for Switch Fuse Unit Metering Panel without CT**

| S.No. | Checklist points | Yes/No | Remarks | | | | | | |
|-------|----------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-----------------|--|-------------------|
| 1 | Trigger/Reason | Yes | Addition of 3 phase SLD | | | | | | |
| 2 | User feedback | Yes | Standardization for meter wiring | | | | | | |
| 3 | Changes incorporated | Yes | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="764 695 1036 764">Clause Name</th> <th data-bbox="1036 695 1308 764">Old Specification ENSE-DS-2026-R00</th> <th data-bbox="1308 695 1581 764">New specification ENSE-DS-2026-R01</th> </tr> </thead> <tbody> <tr> <td data-bbox="764 764 1036 800">Annexure II - B</td> <td data-bbox="1036 764 1308 800"></td> <td data-bbox="1308 764 1581 800">3 phase SLD added</td> </tr> </tbody> </table> | Clause Name | Old Specification ENSE-DS-2026-R00 | New specification ENSE-DS-2026-R01 | Annexure II - B | | 3 phase SLD added |
| | | | Clause Name | Old Specification ENSE-DS-2026-R00 | New specification ENSE-DS-2026-R01 | | | | |
| | | | Annexure II - B | | 3 phase SLD added | | | | |
| 4 | Cost implication | NA | | | | | | | |
| 5 | Access path name | Yes | D:\OneDrive - Tata Power\Engineering Services\Dist Specs\ENSE-DS-2026-R00_Technical Specification of SFU | | | | | | |

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| R01 |  Ketan S. Jadhav 20/09/2024 |  Ajay V. Potdar 20/09/2024 |  Ravindra M. Bhanage 20/09/2024 |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

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- 2.0 APPLICABLE STANDARDS
- 3.0 CLIMATIC CONDITIONS OF THE INSTALLATION
- 4.0 GENERAL TECHNICAL REQUIREMENTS
- 5.0 GENERAL CONSTRUCTIONS
- 6.0 NAME PLATE AND MARKING
- 7.0 TESTS
- 8.0 TYPE TEST CERTIFICATES
- 9.0 PRE-DESPATCH INSPECTION
- 10.0 INSPECTION AFTER RECEIPT AT STORE
- 11.0 GUARANTEE
- 12.0 PACKING
- 13.0 TENDER SAMPLE
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- 15.0 MINIMUM TESTING FACILITIES
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- 18.0 DRAWING AND DOCUMENTS
- 19.0 GUARANTEED TECHNICAL PARTICULARS
- 20.0 SCHEDULE OF DEVIATIONS

ANNEXURE: I II & III

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R01 |  Ketan S. Jadhav |  Ajay V. Potdar |  Ravindra M. Bhanage |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

| 1 | SCOPE | <ol style="list-style-type: none"> This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V Switch Fuse Unit metering panel complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai. It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall can perform in a manner acceptable to the PURCHASER (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith. All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract. All SUBVENDOR/SUBCONTRACTOR list shall also be subject to approval by the PURCHASER (TPC) after award of contract. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------|----------|------------------------|---------------------------------|-----------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------|-----------------|---------------------------------------------|---------------------------|----------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------|---------------------------------------|----|---|-------------------------|--------|---|-------------------------------------|-----|---|--------------|--------------|----|----------------------------------|------------|----|----------------------|--------------|
| 2 | APPLICABLE STANDARDS | <p>The Switch changeover metering panel shall comply with the requirements stated in the latest editions of the following recommendations, standard and specifications:</p> <table border="1"> <thead> <tr> <th>Title</th> <th>Indian standard</th> </tr> </thead> <tbody> <tr> <td>IS 13703</td> <td>Low Voltage HRC Fuses.</td> </tr> <tr> <td>IS 12063</td> <td>Classification of degrees of protection provided by Enclosures of Electrical equipment.</td> </tr> <tr> <td>IS 5082</td> <td>Wrought Aluminium & Al alloy plates & sheets for Electrical application.</td> </tr> <tr> <td>IEC 60529 -1989</td> <td>Degree of Protection provided by Enclosures</td> </tr> <tr> <td>IS 2551 - 1982</td> <td>Danger Notice Plates</td> </tr> <tr> <td>IS/IEC 60947-3 : 2020</td> <td>Low-voltage switchgear and control gear part 3 switches, disconnectors, switch-disconnectors and fuse-combination units</td> </tr> <tr> <td>IS 5</td> <td>Colors for Ready Mixed Paints and Enamels</td> </tr> </tbody> </table> | Title | Indian standard | IS 13703 | Low Voltage HRC Fuses. | IS 12063 | Classification of degrees of protection provided by Enclosures of Electrical equipment. | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for Electrical application. | IEC 60529 -1989 | Degree of Protection provided by Enclosures | IS 2551 - 1982 | Danger Notice Plates | IS/IEC 60947-3 : 2020 | Low-voltage switchgear and control gear part 3 switches, disconnectors, switch-disconnectors and fuse-combination units | IS 5 | Colors for Ready Mixed Paints and Enamels | | | | | | | | | | | | | | | | | |
| Title | Indian standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 13703 | Low Voltage HRC Fuses. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 12063 | Classification of degrees of protection provided by Enclosures of Electrical equipment. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5082 | Wrought Aluminium & Al alloy plates & sheets for Electrical application. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC 60529 -1989 | Degree of Protection provided by Enclosures | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 2551 - 1982 | Danger Notice Plates | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS/IEC 60947-3 : 2020 | Low-voltage switchgear and control gear part 3 switches, disconnectors, switch-disconnectors and fuse-combination units | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5 | Colors for Ready Mixed Paints and Enamels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | CLIMATIC CONDITIONS OF THE INSTALLATION | <table border="1"> <tbody> <tr><td>1</td><td>Maximum ambient temperature</td><td>43 deg.C</td></tr> <tr><td>2</td><td>Max. Daily average ambient temp</td><td>35 deg.C</td></tr> <tr><td>3</td><td>Min Ambient Temperature</td><td>07 deg.C</td></tr> <tr><td>4</td><td>Maximum Relative Humidity</td><td>100%</td></tr> <tr><td>5</td><td>Minimum Relative Humidity</td><td>40%</td></tr> <tr><td>6</td><td>Average No. of thunderstorm per annum</td><td>50</td></tr> <tr><td>7</td><td>Average Annual Rainfall</td><td>2380mm</td></tr> <tr><td>8</td><td>Average No. of rainy days per annum</td><td>115</td></tr> <tr><td>9</td><td>Rainy months</td><td>June to Oct.</td></tr> <tr><td>10</td><td>Altitude above MSL not exceeding</td><td>300 meters</td></tr> <tr><td>11</td><td>Average Air Pressure</td><td>29.6-inch Hg</td></tr> </tbody> </table> <p>Atmosphere is generally laden with mild acid and dust suspended during summer months and subjected to fog in winter months. The design of the equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.</p> | 1 | Maximum ambient temperature | 43 deg.C | 2 | Max. Daily average ambient temp | 35 deg.C | 3 | Min Ambient Temperature | 07 deg.C | 4 | Maximum Relative Humidity | 100% | 5 | Minimum Relative Humidity | 40% | 6 | Average No. of thunderstorm per annum | 50 | 7 | Average Annual Rainfall | 2380mm | 8 | Average No. of rainy days per annum | 115 | 9 | Rainy months | June to Oct. | 10 | Altitude above MSL not exceeding | 300 meters | 11 | Average Air Pressure | 29.6-inch Hg |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Max. Daily average ambient temp | 35 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Min Ambient Temperature | 07 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Maximum Relative Humidity | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Minimum Relative Humidity | 40% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Average No. of thunderstorm per annum | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Average Annual Rainfall | 2380mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Average No. of rainy days per annum | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Rainy months | June to Oct. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Altitude above MSL not exceeding | 300 meters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Average Air Pressure | 29.6-inch Hg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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4 GENERAL TECHNICAL REQUIREMENTS

63A, 100A & 125A SFU

| Sr. No | | 63A SFU | 100A SFU | 125A SFU | To be provided by Bidder |
|----------|---------------------------------------------|-----------------------------------------------------------------------|--------------------|---------------------|--------------------------|
| | Vender Address and contact details | | | | |
| A | Ratings | | | | |
| 1 | Ampere | 63A | 100A | 125A | |
| 2 | Primary Voltage ($\pm 10\%$) | 415V | 415V | 415V | |
| 3 | Phase | 3 phases | 3 phases | 3 phases | |
| 4 | Frequency (Hz) | 50Hz | 50Hz | 50Hz | |
| 5 | Ambient Temp | 50°C | 50°C | 50°C | |
| 6 | Total Temp rise on full load | 90 Degree | 90 Degree | 90 Degree | |
| 7 | Application | Indoor / Outdoor | Indoor / Outdoor | Indoor / Outdoor | |
| 8 | Short Circuit Withstand Current | 50kA | 50kA | 50kA | |
| B | Enclosure | | | | |
| 1 | Overall preferred Dimensions L x W x H (mm) | 300 X 200 X 750 mm | 470X 370X 1300 | 470 X 370 X 1300 mm | |
| 2 | Gauge and material | 16 Gauge M.S Sheet | 16 Gauge M.S Sheet | 16 Gauge M.S Sheet | |
| 3 | Thickness of pleat | 1.6 mm | 1.6 mm | 1.6 mm | |
| 4 | Thickness of Gland plate | 3mm | 3mm | 3mm | |
| 5 | Colour of Body | International Orange shade No 592 of IS-5 | | | |
| 6 | Protection grade of enclosure | IP54 | IP54 | IP54 | |
| 7 | SLD inside of door | SLD shall be pasted on inside part of door | | | |
| 8 | 1 ph supply provision to Modem | To be provided in metering panel | | | |
| C | Bus Bar Size | | | | |
| 1 | Phase Material Aluminium | 100 sq mm connector for Incomer & Outgoing Make: Elmex/connectwell | 1 X 25 X 5 mm | 1 X 25 X 6 mm | |
| 2 | Neutral Material Aluminium | 100 sq mm connector for Incomer & Outgoing Make: Elmex/connectwell | 1 X 25 X 5 mm | 1 X 25 X 6 mm | |
| 3 | Earth Material GI | 1 X 25 X 5 mm | 1 X 25 X 5 mm | 1 X 25 X 6 mm | |

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Ajay V. Potdar

Ravindra M. Bhanage

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| | | | | | |
|----------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--|
| 4 | Removable acrylic insulation barrier over incomer | To be provided | | | |
| D | Fuse Detail | | | | |
| 1 | Make | Schneider/ L&T/ Siemens/ GE Power Controls/ HPL/ Jean Muller / Bussman. | | | |
| 2 | Knife Type | To be provided | | | |
| 3 | Pull out arrangement | With Fuse Puller | With Fuse Puller | With Fuse Puller | |
| 4 | Rating | 63A | 100A | 125A | |
| 5 | Type | HRC | HRC | HRC | |
| 6 | Fast acting gG fuse | To be provided | | | |
| E | CT Detail | (CT to be supplied by TATA POWER & installed by Bidder) | | | |
| 1 | Ratio | NA | 100/5A | 125/5A | |
| 2 | VA rating | NA | 5 VA | 5 VA | |
| 3 | Type | NA | Resin cast | Resin cast | |
| 4 | CT secondary wiring with colour coded | NA | 4 Sq. mm Copper | 4 Sq. mm Copper | |
| 5 | PT secondary wiring with colour coded | NA | 2.5 Sq. mm Copper | 2.5 Sq. mm Copper | |
| 6 | Accuracy class | NA | Class 1.0, 05VA, ISF <=5 | Class 0.5, 05VA, ISF <=5 | |
| F | Switch fuse unit | | | | |
| 1 | Make | L&T, ABB, HPL, Siemens | | | |
| 2 | Rating | 63A | 100A | 125A | |
| 3 | Type | Manual Type | Manual Type | Manual Type | |
| 4 | Pole | TP | TP | TP | |
| 5 | Voltage rating ($\pm 10\%$) | 415 V | | | |
| G | Cable size (For Reference) | 1 Nos. 35 Sq. mm | 1 Nos. 120 Sq. mm | 1 Nos. 120 Sq. mm | |
| 1 | Incoming Cable entry | From Bottom | From Bottom | From Bottom | |
| 2 | Outgoing Cable entry | From Bottom | From Top | From Top | |
| H | SFU with phase barrier | To be provided | | | |
| I | Guaranty Period | 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later | | | |

| | | | | | |
|-----|------------------------------------|----------|----------|----------|--------------------------|
| 4.2 | 160A, 200A & 250A SFU | | | | |
| | | 160A SFU | 200A SFU | 250A SFU | To be provided by Bidder |
| | Vender Address and contact details | | | | |

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| A | Ratings | | | | |
|---|---------------------------------------------------|-------------------------------------------------------------------------|--------------------|--------------------|--|
| 1 | Ampere | 160A | 200A | 250A | |
| 2 | Primary Voltage(±10%) | 415V | 415V | 415V | |
| 3 | Phase | 3 phases | 3 phases | 3 phases | |
| 4 | Frequency (Hz) | 50Hz | 50Hz | 50Hz | |
| 5 | Ambient Temp. | 50°C | 50°C | 50°C | |
| 6 | Total Temp rise on full load | 90 Degree | 90 Degree | 90 Degree | |
| 7 | Application | Indoor/Outdoor | Indoor/Outdoor | Indoor/Outdoor | |
| 8 | Short Circuit Withstand Current | 50kA | 50kA | 50kA | |
| | | | | | |
| B | Enclosure | | | | |
| 1 | Overall preferred Dimensions L x W x H (mm) | 520X420X1300 | 570X470X1300 | 570X 470 X 1300 | |
| 2 | Gauge and material | 16 Gauge M.S Sheet | 16 Gauge M.S Sheet | 16 Gauge M.S Sheet | |
| 3 | Thickness of pleat | 1.6 mm | 1.6 mm | 1.6 mm | |
| 4 | Thickness of Gland Plate | 3mm | 3mm | 3mm | |
| 4 | Colour of Body | International Orange shade No 592 of IS-5 | | | |
| 5 | Protection grade of enclosure | IP54 | IP54 | IP54 | |
| 6 | SLD inside of door | SLD shall be pasted on inside part of door | | | |
| 7 | 1 ph supply provision for Modem | To be provided in metering panel | | | |
| | | | | | |
| C | Bus Bar Size | | | | |
| 1 | Phase Material Aluminium | 1 X 25 X 8 mm | 1 X 25 X 10 mm | 1 X 30 X 10 mm | |
| 2 | Neutral Material Aluminium | 1 X 25 X 8 mm | 1 X 25 X 10 mm | 1 X 30 X 10 mm | |
| 3 | Earth Material GI | 1 X 25 X 6 mm | 1 X 25 X 6 mm | 1 X 25 X 6 mm | |
| 4 | Removable acrylic insulation barrier over incomer | To be provided | | | |
| | | | | | |
| D | Fuse Detail | | | | |
| 1 | Make | Schneider/ L&T/ Siemens/ GE Power Controls/ HPL/ Jean Muller / Bussman. | | | |
| 2 | Knife Type | To be provided | | | |
| 3 | Pull out arrangement | With Fuse Puller | With Fuse Puller | With Fuse Puller | |
| 4 | Rating | 160A | 200A | 250A | |

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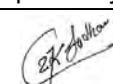
| | | | | | |
|----------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------|--|
| 5 | Type | HRC | HRC | HRC | |
| 6 | Fast acting gG fuse | To be provided | | | |
| E | CT Detail | (CT to be supplied by TATA POWER and installed by Bidders) | | | |
| 1 | Ratio | 150/5A | 200/5 A | 250/5A | |
| 2 | VA rating | 5 VA | 5 VA | 5 VA | |
| 3 | Type | Resin cast | Resin cast | Resin cast | |
| 4 | CT secondary wiring with colour coded | 4 Sq. mm Copper | 4 Sq. mm Copper | 4 Sq. mm Copper | |
| 5 | PT secondary wiring with colour coded | 2.5 Sq. mm Copper | 2.5 Sq. mm Copper | 2.5 Sq. mm Copper | |
| 6 | Accuracy class | Class 0.5, 05VA, ISF <=5 | Class 0.5, 05VA, ISF <=5 | Class 0.5, 10VA, ISF <=5 | |
| F | Switch fuse unit | | | | |
| 1 | Make | L&T, ABB, HPL, Siemens | | | |
| 2 | Rating | 160A | 200A | 250A | |
| 3 | Type | Manual Type | Manual Type | Manual Type | |
| 4 | Pole | TP | TP | TP | |
| 5 | Voltage rating ($\pm 10\%$) | 415 V | | | |
| G | Cable size (For Reference) | 1 Nos. 185 Sq. mm | 1 Nos. 185 Sq. mm/ 2 No. 120 sq.mm | 1 Nos. 300 Sq. mm/ 2 no 185 sq.mm | |
| 1 | Incoming Cable entry | From Bottom | From Bottom | From Bottom | |
| 2 | Outgoing Cable entry | From Top | From Top | From Top | |
| H | SFU with phase barrier | To be provided | | | |
| I | Guarantee Period | 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later | | | |

400A, 630A & 800A SFU

| | | | | | |
|-----|------------------------------|-------------------------------------|-----------|-----------|--------------------------|
| 4.3 | Sr. No | 400A SFU | 630A SFU | 800A SFU | To be provided by Bidder |
| | | Vender Address and contacts details | | | |
| | A | Ratings | | | |
| | 1 | Ampere | 400A | 630A | 800A |
| | 2 | Primary Voltage ($\pm 10\%$) | 415V | 415V | 415V |
| | 3 | Phase | 3 phases | 3 phases | 3 phases |
| | 4 | Frequency (Hz) | 50Hz | 50Hz | 50Hz |
| | 5 | Ambient Temp. | 50°C | 50°C | 50°C |
| 6 | Total Temp rise on full load | 90 Degree | 90 Degree | 90 Degree | |

| | | | |
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| | | | | | |
|----------|---------------------------------------------------|-------------------------------------------------------------------------|--------------------------|--------------------------|--|
| 7 | Application | Indoor / Outdoor | Indoor / Outdoor | Indoor / Outdoor | |
| 8 | Short Circuit Withstand Current | 50kA | 50kA | 50kA | |
| B | Enclosure | | | | |
| 1 | Overall preferred Dimensions L x W x H (mm) | 620 X470 X 1350 | 620 X 470 X 1350 | 770 X 470 X 1700 | |
| 2 | Gauge and material | 16 Gauge M.S Sheet | 16 Gauge M.S Sheet | 16 Gauge M.S Sheet | |
| 3 | Thickness of pleat | 1.6 mm | 1.6 mm | 1.6 mm | |
| 4 | Thickness of Gland plate | 3mm | 3mm | 3mm | |
| 4 | Colour of Body | International Orange shade No 592 of IS-5 | | | |
| 5 | Protection grade of enclosure | IP54 | IP54 | IP54 | |
| 6 | SLD inside of door | SLD shall be pasted on inside part of door | | | |
| 7 | 1 ph supply provision for Modem | To be provided in metering panel | | | |
| C | Bus Bar Size | | | | |
| 1 | Phase Material Aluminium | 1 X 50 X 10 mm | 1 X 40 X 20 mm | 1 X 50 X 20 mm | |
| 2 | Neutral Material Aluminium | 1 X 50 X 10 mm | 1 X 40 X 20 mm | 1 X 50 X 20 mm | |
| 3 | Earth Material GI | 1 X 50 X 6 mm | 1 X 50 X 6 mm | 1 X 50 X 6 mm | |
| 4 | Removable acrylic insulation barrier over incomer | To be provided | | | |
| D | Fuse Detail | | | | |
| 1 | Make | Schneider/ L&T/ Siemens/ GE Power Controls/ HPL/ Jean Muller / Bussman. | | | |
| 2 | Knife Type | To be provided | | | |
| 3 | Pull out arrangement | With Fuse Puller | With Fuse Puller | With Fuse Puller | |
| 4 | Rating | 400A | 630A | 800A | |
| 5 | Type | HRC | HRC | HRC | |
| 6 | Fast acting gG fuse | To be provided | | | |
| E | CT Detail | (CT to be supplied by TATA POWER) | | | |
| 1 | Ratio | 400/5A | 600/5 A | 800/5 A | |
| 2 | VA rating | 10 VA | 10 VA | 10 VA | |
| 3 | Type | Resin cast | Resin cast | Resin cast | |
| 4 | CT secondary wiring with colour coded | 4 Sq. mm Copper | 4 Sq. mm Copper | 4 Sq. mm Copper | |
| 5 | PT secondary wiring with colour coded | 2.5 Sq. mm Copper | 2.5 Sq. mm Copper | 2.5 Sq. mm Copper | |
| 6 | Accuracy class | Class 0.5, 10VA, ISF <=5 | Class 0.5, 10VA, ISF <=5 | Class 0.5, 10VA, ISF <=5 | |
| F | Switch fuse unit | | | | |

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| | | | | |
|---|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|
| 1 | Make | L&T, ABB, HPL, Siemens | | |
| 2 | Rating | 400A | 630A | 800A |
| 3 | Type | Manual Type | Manual Type | Manual Type |
| 4 | Pole | TP | TP | TP |
| 5 | Voltage rating ($\pm 10\%$) | 415 V | | |
| G | Cable size (For Reference) | 1 Nos. 300 Sq. mm/ 2 no.s 185 sq.mm | 2 Nos. 300 Sq. mm | 3 Nos. 300 Sq. mm |
| 1 | Incoming Cable entry | From Bottom | From Bottom | From Bottom |
| 2 | Outgoing cable entry | From Top | From Top | From Top |
| H | SFU with phase barrier | To be provided | | |
| I | Guaranty Period | 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later | | |

5 GENERAL CONSTRUCTION

| | | |
|-----|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.1 | Panel Metal Box | <ol style="list-style-type: none"> The Metering panel shall be Metal enclosed with access from Front side. The Metering panel shall be of Dust & Vermin proof construction having IP 54 protection and adequate louvers for cooling. There should be wire mesh inside louvers with check-nut arrangement. Incoming Cable entry facilities at bottom of panel and removable gland plates of size suitable to accommodate incoming cables with desired cable sizes. Outgoing Cable entry facilities at top of panel and removable gland plates of size suitable to accommodate outgoing cables with desired cable sizes. Phase barriers for SFU should be provided. Padlock arrangement to be provided for SFU operating handle. There will be two door arrangement in Top side of Metering panel. One MS sheet openable door arrangement to be provided in between Meter and Outgoing busbar and second door to be provided above meter & control panel with locking arrangement. I/C cable connection & O/G cable connection will be done on busbars. Hole size needs to be mentioned considering cable lug palm & hole position. Removable acrylic insulation barrier sheet to be provided over incoming busbar. Minimum clearance between phases 25 mm & phase to neutral 20 mm. |
| 5.2 | Bus Bar | <ol style="list-style-type: none"> Busbars shall be made of Electrical Grade Aluminium alloy and of suitable size to withstand the specified circuit rating. The busbars will be supported with epoxy insulators and insulated with colour code sleeves. Voltage tapping to be taken from busbar and not from SFU. Size of hole as 12.5mm for cable lug termination for all at Termination. Phase arrangement to be RYBN (from Left to Right) Bus-bar arrangement should be staggered type for both incoming and outgoing cable termination. |

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| The Tata Power Company Ltd | |  | | TECHNICAL SPECIFICATION FOR SWITCH FUSE UNIT METERING PANEL WITHOUT CT | |
|----------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|--|
| ENSE-DS-2026-R01 | | | | Date of Issue: 20/09/2024 | |
| | | 7. Busbar aluminium current density should be less than 1A/sqmm. 8. Neutral busbar to be connected to with earth busbar via disconnecting link. Link size should be same as neutral busbar. | | | |
| 5.3 | Metering compartment | 1. Adequate space for mounting TVM should be provided in compartment with suitable window with "Transparent Toughened Glass" shall be provided to view TVM readings from outside the compartment (without opening the door). The glass window to be aligned with meter display. Smart meter to get accommodated in the same space. 2. Provision to be provided for mounting the energy meter with max dimensions as L x B x D: 360 x 200 x 200 mm (Energy meter will be supplied by TPC). 3. Colour coded wires for the same to be provided. 4. Wiring provision to be made for MODEM through 2A fuse with holders and ferruling and length of wire should be sufficient to avoid loose connection. 5. Mounting plate to be provided for fixing of Meter & fuses. 6. Metering compartment should be separate from busbar compartment. | | | |
| 5.4 | CT Details | 1. CT's will be provided by Tata power. All vendors should collect CTs from Tata Power store and CTs to be mounted on panel as per approved GA drawing. 2. Transportation cost for collecting Tested CTs from TATA POWER warehouse is in OEM scope. 3. CT installation on busbar should ensure the manufacturing details are visible and same needs to be mentioned on metering & CT compartment door. The secondary terminal should be clearly visible and accessible for checking tightness. 4. Paper sticker to be pasted in CT compartment door mentioning CT Make, CT Serial no, phase, accuracy class & burden. 5. Colour coded wires to be provided from CT Secondary (s1 & s2 of each CT) to TVM Slot. CT secondary (S2 terminal) should be grounded. 6. Colour coded wires to be provided from Busbar to TVM Slot. 7. Ferruling to be done for CT/PT wires. 8. CT secondary wiring to be properly dressed upto metering compartment. 9. The CT secondary S2 terminal to be looped and grounded at main earth busbar | | | |
| 5.5 | Power provision Supply for Modem | 1. Provision of 2A fuse and neutral link needs to be provided to extend to supply to the modem. 2. Pocket provision (140Lx 85Hx 40D mm) to be made in metering compartment door for installing modem and a hole provision with rubber grommet to be made for connecting wires to outside antenna. | | | |
| 6.0 | NAME PLATE AND MARKING | 6.1 Name plate- On front door top left side-showing 1) Purchaser name, PO number & SAP code 2) Manufacturer name 3) Month / year of manufacturing 4) 'Property of Tata Power 6.2 Separate metallic name plate with Tata Power Logo of Dimension 6*6 Inches in clear font as shown below. | | | |

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Relationship between the two marks- size

The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.

The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.

The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.

The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.



Relationship between the two marks- positioning

The two marks can appear stacked, which is the preferred placement, or linear, by the side of one another.

Centre aligned - Stacked (Preferred)



- 1) Marking for panel earth stud- Black letter 'E', on riveted Al label
- 2) Danger board in English & local language, riveted on doors- White colour background with Red lettering on 1.6mm thick Al plate.
- 3) Surface preparation for painting- Sand blasting or 7 tank processes.
- 4) Painting - Power coated grade A polyester paint with min thickness 120 micron.
- 5) SLD shall be engraved & pasted on inside of door.
- 6) Panel serial number to be provided.

7.0 TESTS

TESTING & INSPECTION Requirement: -

- 7.1 Prototype to be offered for inspection and based on the observations rest of the order may be executed. Only type tested components – Switch, Fuses, Insulators & aluminium bus bar shall be accepted.
- 7.2 Type Test: - Following Tests should be carried out as per **IS/IEC 60947-3 : 2020** as per clause no. 9.1.2 The verification of,
 - a) Constructional Requirements
 - b) Temperature rise Test
 - c) Dielectric properties
 - d) Making & Breaking capacity & short circuit Test
 - e) Operating Limits
 - f) Operational performance
 - g) Degree of protection of enclosed equipment
- 7.3 Routine test/acceptance test - (Inspection test witness by purchaser)
 - 1) Visual inspection, dimension checks & paint thickness check.
 - 2) Bill of material check

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| The Tata Power Company Ltd | |  | | TECHNICAL SPECIFICATION FOR SWITCH FUSE UNIT METERING PANEL WITHOUT CT | |
|----------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|--|
| ENSE-DS-2026-R01 | | | | Date of Issue: 20/09/2024 | |
| | | 3) Insulation resistance test/ Dielectric Test 4) High voltage test 5) Operational check/Functional Check 7.4 Tolerances on panel dimensions- Maximum +/- 5mm 7.5 No negative tolerance on bus bar dimensions & bus bar clearances 7.6 Prototype panel to be approved by Tata Power for new vendors. | | | |
| 8.0 | TYPE TEST CERTIFICATES | 1. The Bidder shall furnish the type test certificates of SFUs for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI / ERDA / NABL as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product. 2. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER COMPANY. | | | |
| 9.0 | PRE-DESPATCH INSPECTION | 1. The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY's representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection. 2. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY. 3. Following documents shall be sent along with material <ol style="list-style-type: none"> Test reports MDCC issued by TATA POWER COMPANY Invoice in duplicate Packing list Drawings & catalogue Guarantee / Warrantee card Delivery Challan Other Documents (as applicable). | | | |
| 10.0 | INSPECTION AFTER RECEIPT AT STORE | The material received at store will be inspected for acceptance and shall be liable for differences from the reports of the pre-dispatch inspection and one copy of the report shall be sent to TATA POWER COMPANY. | | | |

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| The Tata Power Company Ltd | |  | | TECHNICAL SPECIFICATION FOR SWITCH FUSE UNIT METERING PANEL WITHOUT CT | |
|----------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|
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| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the TATA POWER COMPANY up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements) Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the TATA POWER COMPANY will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> | | | |
| 12.0 | PACKING | <ol style="list-style-type: none"> 1) Packing protection- Against shocks, vibration & corrosion, damages during transportation 2) Packing identification labels, to show purchaser name, PO number, quantity of panels, Panel type, Manufacturer serial number 3) Handling instruction- To be marked on packing boxes. 4) Bidders should prefer to use recyclable & environmentally friendly materials for packing. 5) No single use plastic to be used. | | | |
| 13.0 | TENDER SAMPLE | NA | | | |
| 14.0 | QUALITY CONTROL | <ol style="list-style-type: none"> 1. The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected. 2. TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections. | | | |
| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards. | | | |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). | | | |
| 17.0 | SPARES, ACCESSORIES AND TOOLS | NA | | | |

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R01 |  Ketan S. Jadhav |  Ajay V. Potdar |  Ravindra M. Bhanage |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

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|----------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH FUSE UNIT METERING PANEL WITHOUT CT |
| ENSE-DS-2026-R01 | | Date of Issue: 20/09/2024 |

| | | |
|------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18.0 | DRAWINGS AND DOCUMENTS | <ol style="list-style-type: none"> 1. Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid: <ol style="list-style-type: none"> a) Filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates 2. After the award of the contract copies of drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval 3. All the documents & drawings shall be in English language. |
|------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| | | |
|------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 19.0 | GUARANTEED TECHNICAL PARTICULARS | Bidders to comply for all above requirement of specifications clauses & submit signed and stamp copy as technical compliance document. |
|------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|

| | | |
|------|-------------------------------|--|
| 20.0 | SCHEDULE OF DEVIATIONS | |
|------|-------------------------------|--|

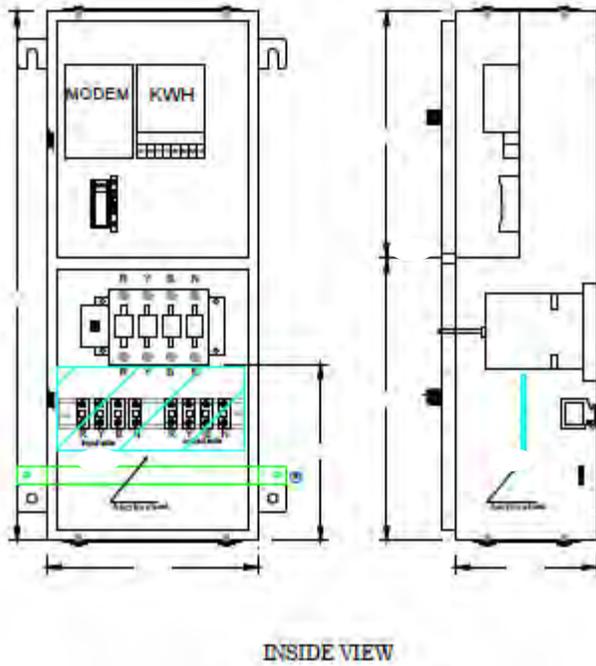
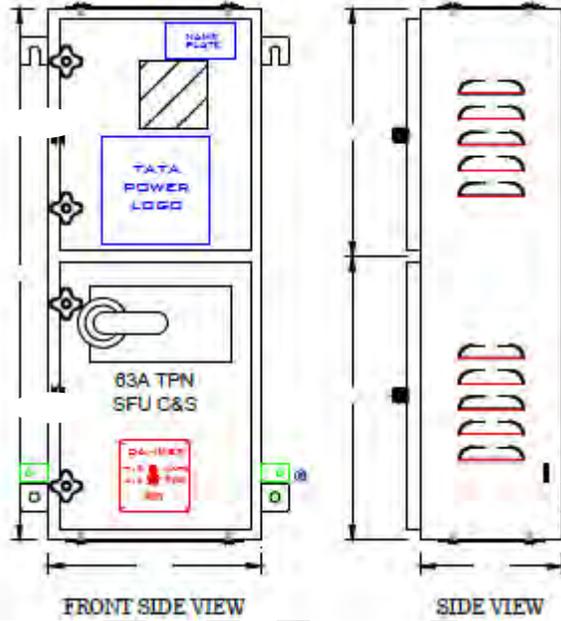
| <u>(TO BE ENCLOSED WITH THE BID)</u> | | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------|---------|------------|------------------------------------------|--|--|--|
| All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications: | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 15%;">Clause No.</th> <th style="width: 75%;">Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"></td> <td></td> <td></td> </tr> </tbody> </table> | | | Sr. No. | Clause No. | Details of deviation with justifications | | | |
| Sr. No. | Clause No. | Details of deviation with justifications | | | | | | |
| | | | | | | | | |
| We confirm that there are no deviations apart from those detailed above. | | | | | | | | |
| Seal of the Company: | | Signature | | | | | | |
| | | Designation | | | | | | |

| | | | |
|---------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
| R01 |  Ketan S. Jadhav |  Ajay V. Potdar |  Ravindra M. Bhanage |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

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| ENSE-DS-2026-R01 | | Date of Issue: 20/09/2024 |

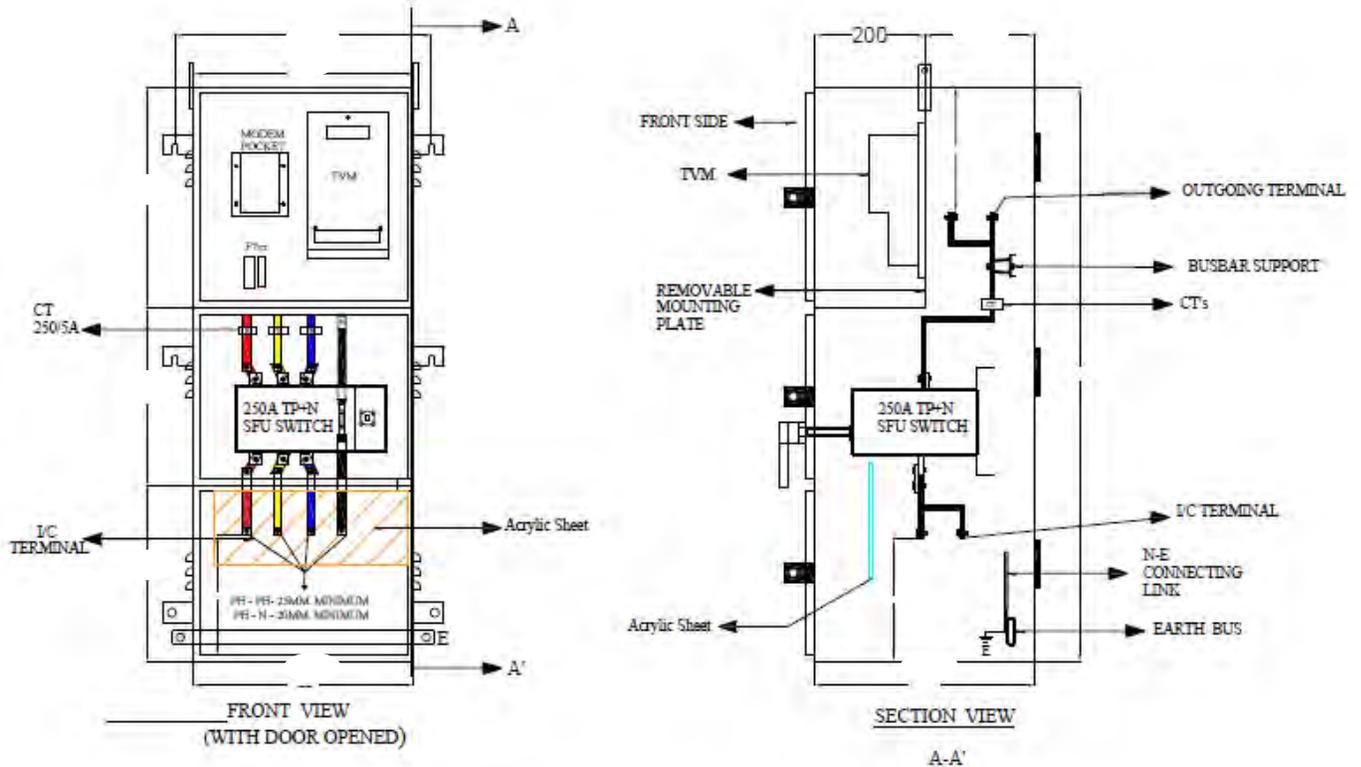
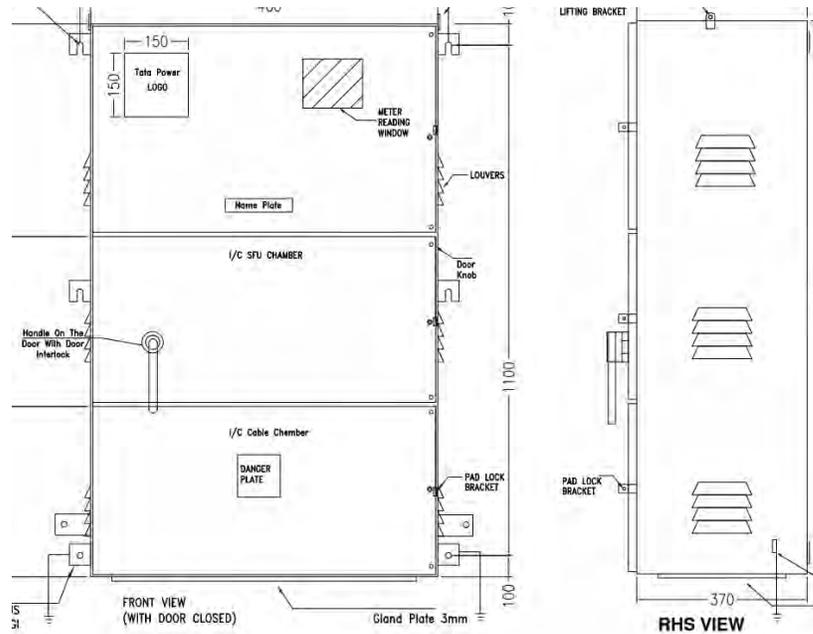
ANNEXURE I - Reference Drawings

A. 63A SFU



| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| R01 |  Ketan S. Jadhav 20/09/2024 |  Ajay V. Potdar 20/09/2024 |  Ravindra M. Bhanage 20/09/2024 |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

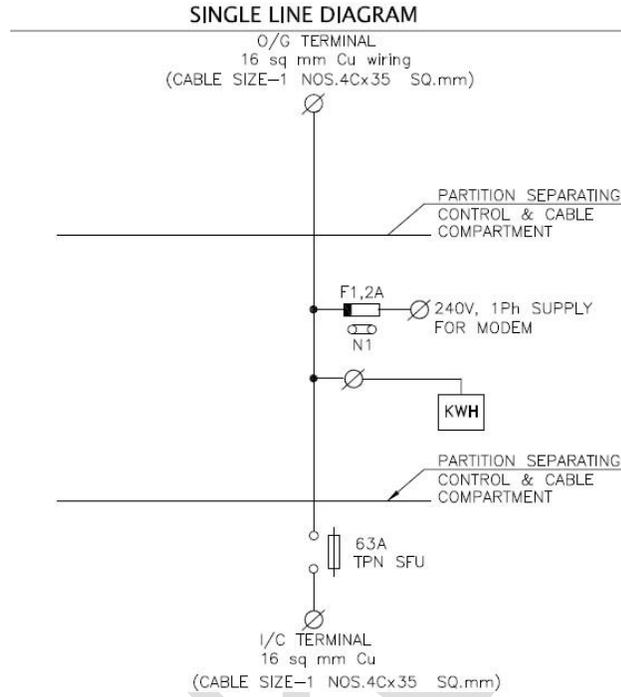
B. 100A/125A/160/200A/250A/400A/630A/800A SFU



| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-----------------------------------|----------------------------------|---------------------------------------|
| R01 | Ketan S. Jadhav 20/09/2024 | Ajay V. Potdar 20/09/2024 | Ravindra M. Bhanage 20/09/2024 |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

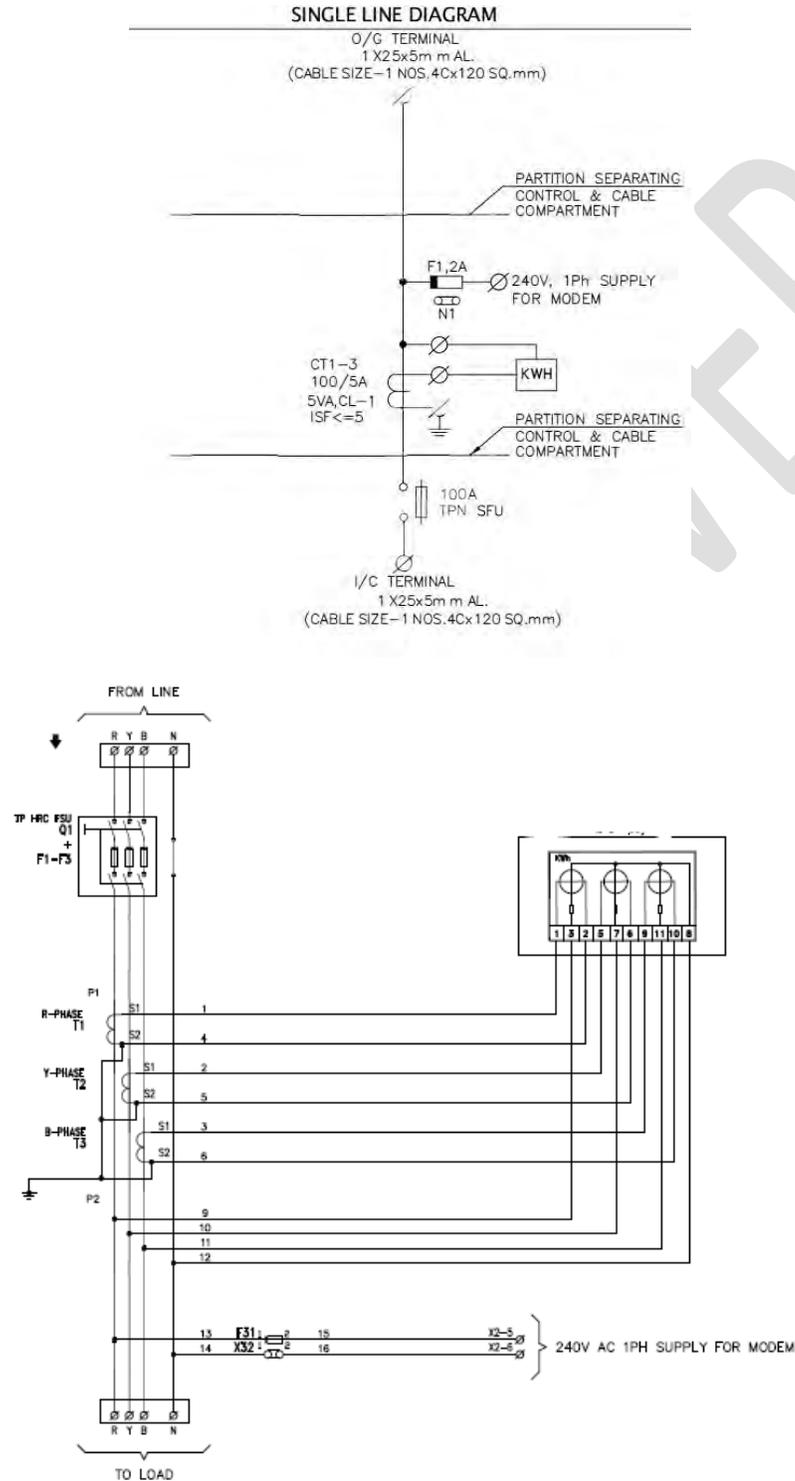
ANNEXURE II - Reference SLD's

A. 63A SFU



| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|---------------------|--------------------|------------------------------|
| R01 | Ketan S. Jadhav | Ajay V. Potdar | Ravindra M. Bhanage |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

B. 100A/125A/160/200A/250A/400A/630A/800A SFU SLD Reference:



| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|---------|-----------------------------------|----------------------------------|---------------------------------------|
| R01 | Ketan S. Jadhav 20/09/2024 | Ajay V. Potdar 20/09/2024 | Ravindra M. Bhanage 20/09/2024 |
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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH FUSE UNIT METERING PANEL WITHOUT CT |
| ENSE-DS-2026-R01 | | Date of Issue: 20/09/2024 |

ANNEXURE III: Inspection testing plan

1. Visual inspection, dimension checks & paint thickness check.
2. Bill of material check
3. Insulation resistance test/ Dielectric Test
4. High voltage test
5. Operational check/Functional Check

TATA POWER

| Rev No. | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| R01 |  Ketan S. Jadhav 20/09/2024 |  Ajay V. Potdar 20/09/2024 |  Ravindra M. Bhanage 20/09/2024 |
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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH CHANGEOVER METERING PANEL WITHOUT CT |
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TECHNICAL SPECIFICATION

Switch Changeover Metering Panel without CT (Rating- 125A, 250A, 400A, 630A, 800A)

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division, Senapati Bapat Marg,
Lower Parel, Mumbai – 400013 Maharashtra

| | | |
|----------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH CHANGEOVER METERING PANEL WITHOUT CT |
| ENSE-DS-2027-R01 | | Date of Issue: 20/9/2024 |

Document No: ENSE-DS-2027-R01

Document Title: Technical specifications for Switch Changeover Metering Panel without CT

| | | | | | | | | |
|---------|------------------------------------------|----------|------------------|-----------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|
| 01 | For tender purpose (ENSE-DS-2027-R01) | 20/09/24 | KSJ |  | AVP |  | RMB |  |
| 00 | For tender purpose (ENSE-DS-2027-R00) | 20/11/23 | KSJ |  | AVP |  | RMB |  |
| R6 | D-NPCE-SPEC-22 | 12/00/22 | Soumya Sidhamwar | -SD- | Vikas Koul | -SD- | S B Modak | -SD- |
| R5 | D-NPCE-SPEC-14 | 05/06/20 | AS | -SD- | | | RK | -SD- |
| R4 | D-NPCE-SPEC-14 | 16/04/20 | AS | -SD- | | | NCP | -SD- |
| R3 | D-NPCE-SPEC-14 | 23/5/19 | ND | -SD- | | | NCP | -SD- |
| R2 | D-NPCE-SPEC-14 | 3/11/18 | ND | -SD- | | | NCP | -SD- |
| R1 | D-NPCE-SPEC-14 | 14/11/16 | ND | -SD- | | | CKC | -SD- |
| R0 | D-NPCE-SPEC-14 | 25/06/16 | AP | -SD- | | | CKC | -SD- |
| Rev No. | Remarks | Date | Initials | Sign | Initials | Sign | Initials | Sign |
| | | | Prepared By | | Checked By | | Approved and Issued By | |

The Tata Power Company Ltd.
Engineering Services (ENSE),
Distribution Division, Senapati Bapat Marg,
Lower Parel, Mumbai – 400013 Maharashtra

| | | | |
|------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
| R00 |  Ketan S. Jadhav |  Ajay V. Potdar |  Ravindra M. Bhanage |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH CHANGEOVER METERING PANEL WITHOUT CT |
| ENSE-DS-2027-R01 | | Date of Issue: 20/9/2024 |

CHECK LIST – NEW or REVISION OF OLD SPECIFICATION

Document No: ENSE-DS-2027-R01

Revision No.: 01

Document Title: **Technical specifications for Switch Changeover Metering Panel without CT**

| S.No. | Checklist points | Yes/No | Remarks | | | | | | | | | |
|-----------------|----------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------|---------------------------------------|-------------------------------|--|---------------------------------------------------------|-----------------|--|-------------------|
| 1 | Trigger/Reason | Yes | Addition of new 800 A panel rating & meter wiring | | | | | | | | | |
| 2 | User feedback | Yes | Standardization for new 800 A panel rating & standard meter wiring | | | | | | | | | |
| 3 | Changes incorporated | Yes | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="768 625 1036 695">Clause Name</th> <th data-bbox="1036 625 1317 695">Old Specification ENSE-DS-2027-R00</th> <th data-bbox="1317 625 1576 695">New specification ENSE-DS-2027-R01</th> </tr> </thead> <tbody> <tr> <td data-bbox="768 695 1036 821">General Technical Particulars</td> <td data-bbox="1036 695 1317 821"></td> <td data-bbox="1317 695 1576 821">800 A CO rating added. Encloser & Busbar size added.</td> </tr> <tr> <td data-bbox="768 821 1036 852">Annexure II - B</td> <td data-bbox="1036 821 1317 852"></td> <td data-bbox="1317 821 1576 852">3 phase SLD added</td> </tr> </tbody> </table> | Clause Name | Old Specification ENSE-DS-2027-R00 | New specification ENSE-DS-2027-R01 | General Technical Particulars | | 800 A CO rating added. Encloser & Busbar size added. | Annexure II - B | | 3 phase SLD added |
| | | | Clause Name | Old Specification ENSE-DS-2027-R00 | New specification ENSE-DS-2027-R01 | | | | | | | |
| | | | General Technical Particulars | | 800 A CO rating added. Encloser & Busbar size added. | | | | | | | |
| Annexure II - B | | 3 phase SLD added | | | | | | | | | | |
| 4 | Cost implication | NA | | | | | | | | | | |
| 5 | Access path name | Yes | D:\OneDrive - Tata Power\Engineering Services\Dist Specs\ENSE-DS-2027-R00_Technical Specification of C_O Panel | | | | | | | | | |

| | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R00 |  Ketan S. Jadhav |  Ajay V. Potdar |  Ravindra M. Bhanage |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

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- 3.0 CLIMATIC CONDITIONS OF THE INSTALLATION
- 4.0 GENERAL TECHNICAL REQUIREMENTS
- 5.0 GENERAL CONSTRUCTIONS
- 6.0 NAME PLATE AND MARKING
- 7.0 TESTS
- 8.0 TYPE TEST CERTIFICATES
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- 17.0 SPARES, ACCESSORIES AND TOOLS
- 18.0 DRAWING AND DOCUMENTS
- 19.0 GUARANTEED TECHNICAL PARTICULARS
- 20.0 SCHEDULE OF DEVIATIONS

ANNEXURE: I II & III

| | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
|------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| R00 |  Ketan S. Jadhav |  Ajay V. Potdar |  Ravindra M. Bhanage |
| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

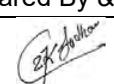
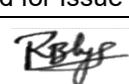
| | | |
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| The Tata Power Company Ltd |  | TECHNICAL SPECIFICATION FOR SWITCH CHANGEOVER METERING PANEL WITHOUT CT |
| ENSE-DS-2027-R01 | | Date of Issue: 20/9/2024 |

| 1 | SCOPE | <ol style="list-style-type: none"> 1. This specification covers design, engineering, manufacture; shop testing, inspection, painting, packing, and supply of 415V Change over Switch Fuse metering panel complete with all accessories for efficient and trouble-free operation of the distribution network for Tata Power Company Limited at Mumbai. 2. It is not our intent to specify completely herein all details of design and construction of the equipment. However, the equipment shall conform in all respects to high standards of Engineering design and workmanship and shall can perform in a manner acceptable to the PURCHASER (TPC) who will interpret the meaning of drawings and specification and shall be entitled to reject any work or material which in his judgement is not in full accordance therewith. 3. All the bought-out items shall be of reputed make and shall be subject to approval by the PURCHASER (TPC) after award of contract. All SUBVENDOR/SUBCONTRACTOR list shall also be subject to approval by the PURCHASER (TPC) after award of contract. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------|----------|------------------------|---------------------------------|-----------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------|-----------------|---------------------------------------------|---------------------------|----------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------|---------------------------------------|----|---|-------------------------|--------|---|-------------------------------------|-----|---|--------------|--------------|----|----------------------------------|------------|----|----------------------|--------------|
| 2 | APPLICABLE STANDARDS | <p>The Switch changeover metering panel shall comply with the requirements stated in the latest editions of the following recommendations, standard and specifications:</p> <table border="1" data-bbox="391 831 1523 1314"> <thead> <tr> <th>Title</th> <th>Indian standard</th> </tr> </thead> <tbody> <tr> <td>IS 13703</td> <td>Low Voltage HRC Fuses.</td> </tr> <tr> <td>IS 12063</td> <td>Classification of degrees of protection provided by Enclosures of Electrical equipment.</td> </tr> <tr> <td>IS 5082</td> <td>Wrought Aluminium & Al alloy plates & sheets for Electrical application.</td> </tr> <tr> <td>IEC 60529 -1989</td> <td>Degree of Protection provided by Enclosures</td> </tr> <tr> <td>IS 2551 - 1982</td> <td>Danger Notice Plates</td> </tr> <tr> <td>IS/IEC 60947-3 : 2020</td> <td>Low-voltage switchgear and control gear part 3 switches, disconnectors, switch-disconnectors and fuse-combination units</td> </tr> <tr> <td>IS 5</td> <td>Colors for Ready Mixed Paints and Enamels</td> </tr> </tbody> </table> | Title | Indian standard | IS 13703 | Low Voltage HRC Fuses. | IS 12063 | Classification of degrees of protection provided by Enclosures of Electrical equipment. | IS 5082 | Wrought Aluminium & Al alloy plates & sheets for Electrical application. | IEC 60529 -1989 | Degree of Protection provided by Enclosures | IS 2551 - 1982 | Danger Notice Plates | IS/IEC 60947-3 : 2020 | Low-voltage switchgear and control gear part 3 switches, disconnectors, switch-disconnectors and fuse-combination units | IS 5 | Colors for Ready Mixed Paints and Enamels | | | | | | | | | | | | | | | | | |
| Title | Indian standard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 13703 | Low Voltage HRC Fuses. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 12063 | Classification of degrees of protection provided by Enclosures of Electrical equipment. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5082 | Wrought Aluminium & Al alloy plates & sheets for Electrical application. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC 60529 -1989 | Degree of Protection provided by Enclosures | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 2551 - 1982 | Danger Notice Plates | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS/IEC 60947-3 : 2020 | Low-voltage switchgear and control gear part 3 switches, disconnectors, switch-disconnectors and fuse-combination units | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IS 5 | Colors for Ready Mixed Paints and Enamels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | CLIMATIC CONDITIONS OF THE INSTALLATION | <table border="1" data-bbox="415 1352 1390 1780"> <tbody> <tr><td>1</td><td>Maximum ambient temperature</td><td>43 deg.C</td></tr> <tr><td>2</td><td>Max. Daily average ambient temp</td><td>35 deg.C</td></tr> <tr><td>3</td><td>Min Ambient Temperature</td><td>07 deg.C</td></tr> <tr><td>4</td><td>Maximum Relative Humidity</td><td>100%</td></tr> <tr><td>5</td><td>Minimum Relative Humidity</td><td>40%</td></tr> <tr><td>6</td><td>Average No. of thunderstorm per annum</td><td>50</td></tr> <tr><td>7</td><td>Average Annual Rainfall</td><td>2380mm</td></tr> <tr><td>8</td><td>Average No. of rainy days per annum</td><td>115</td></tr> <tr><td>9</td><td>Rainy months</td><td>June to Oct.</td></tr> <tr><td>10</td><td>Altitude above MSL not exceeding</td><td>300 meters</td></tr> <tr><td>11</td><td>Average Air Pressure</td><td>29.6-inch Hg</td></tr> </tbody> </table> | 1 | Maximum ambient temperature | 43 deg.C | 2 | Max. Daily average ambient temp | 35 deg.C | 3 | Min Ambient Temperature | 07 deg.C | 4 | Maximum Relative Humidity | 100% | 5 | Minimum Relative Humidity | 40% | 6 | Average No. of thunderstorm per annum | 50 | 7 | Average Annual Rainfall | 2380mm | 8 | Average No. of rainy days per annum | 115 | 9 | Rainy months | June to Oct. | 10 | Altitude above MSL not exceeding | 300 meters | 11 | Average Air Pressure | 29.6-inch Hg |
| 1 | Maximum ambient temperature | 43 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Max. Daily average ambient temp | 35 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Min Ambient Temperature | 07 deg.C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Maximum Relative Humidity | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Minimum Relative Humidity | 40% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Average No. of thunderstorm per annum | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Average Annual Rainfall | 2380mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Average No. of rainy days per annum | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Rainy months | June to Oct. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Altitude above MSL not exceeding | 300 meters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Average Air Pressure | 29.6-inch Hg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | |
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| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months. The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.3 g.
For Mumbai the atmosphere is mainly humid across year.

| 4 | General Technical requirements | | | | | | |
|----------|------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------|-----------------------|------------------------|------------------------|-----------------------|
| | | 125A CO | 250A CO | 400A SFU | 630A CO | 800 A CO | Vendor to be provided |
| | Vendor Address and contact details | | | | | | |
| A | Ratings | | | | | | |
| 1 | Ampere | 125A | 250A | 400A | 630A | 800 A | |
| 2 | Primary Voltage ($\pm 10\%$) | 415 V | | | | | |
| 3 | Phase | 3 phases | | | | | |
| 4 | Frequency (Hz) | 50Hz | | | | | |
| 5 | Ambient Temp. | 50°C | | | | | |
| 6 | Total Temp rise on full load | 90 Degree | | | | | |
| 7 | Application | Outdoor / Indoor | | | | | |
| 8 | Short Circuit Withstand Current | 50kA | | | | | |
| B | Enclosure | | | | | | |
| 1 | Overall preferred Dimensions L x W x H (mm) | 470 X 400 X 1300 mm | 570X 500 X 1300 mm | 620 X500 X 1500 mm | 620 X 500 X 1500 mm | 770 X 570 X 1700 mm | |
| 2 | Gauge and material | 16 Gauge M.S Sheet | | | | | |
| 3 | Thickness of pleat | 1.6 mm | | | | | |
| 4 | Thickness of Gland Plate | 3mm | | | | | |
| 4 | Colour of Body | International Orange shade No 592 of IS-5 | | | | | |
| 5 | Protection grade of enclosure | IP54 | | | | | |
| 6 | SLD inside of door | SLD shall be pasted on inside part of door | | | | | |
| 7 | 1 ph supply provision to Modem | To be provided in metering panel | | | | | |
| C | Bus Bar Size | | | | | | |
| 1 | Phase Material Aluminium | 1 X 25 X 6 mm | 1 X 30 X 10 mm | 1 X 50 X 10 mm | 1 X 40 X 20 mm | 1 X 50 X 20 mm | |
| 2 | Neutral Material Aluminium | 1 X 25 X 6 mm | 1 X 30 X 10 mm | 1 X 50 X 10 mm | 1 X 40 X 20 mm | 1 X 50 X 20 mm | |
| 3 | Earth Material GI | 1 X 25 X 6 mm | 1 X 25 X 6 mm | 1 X 50 X 6 mm | 1 X 50 X 6 mm | 1 X 50 X 6 mm | |
| 4 | Removable acrylic insulation barrier sheet over both incoming busbars. | To be provided | | | | | |
| D | Fuse Detail | | | | | | |
| 1 | Make | Schneider/ L&T/ Siemens/ GE Power Controls/ HPL/ Jean Muller / Bussman. | | | | | |
| 2 | Knife Type | To be provided | | | | | |

| | Prepared By & Date | Checked By & Date | Approved for Issue By & Date |
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| Date | 20/09/2024 | 20/09/2024 | 20/09/2024 |

| The Tata Power Company Ltd | |  | | | | | TECHNICAL SPECIFICATION FOR SWITCH CHANGEOVER METERING PANEL WITHOUT CT | |
|----------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------|-------------------------|-------------------------|-------------------------------------------------------------------------|--|
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| 3 | Pull out arrangement | With Fuse Puller | | | | | | |
| 4 | Rating | 125A | 250A | 400A | 630A | 800 A | | |
| 5 | Type | HRC | | | | | | |
| 6 | Fast acting gG fuse | To be provided | | | | | | |
| E | CT Detail | (CT to be supplied by TATA POWER and installed by OEM) | | | | | | |
| 1 | Ratio | 125/5A | 250/5A | 400/5A | 630/5 A | 800 A | | |
| 2 | VA rating | 5 VA | 5 VA | 5 VA | 5 VA | 5 VA | | |
| 3 | Type | Resin cast | | | | | | |
| 4 | CT secondary wiring with colour coded | 4 Sq. mm Copper | | | | | | |
| 5 | PT secondary wiring with colour coded | 2.5 Sq. mm Copper | | | | | | |
| 6 | Accuracy class | Class 0.5, 5VA, ISF <=5 | Class 0.5, 5VA, ISF <=5 | Class 0.5, 5VA, ISF <=5 | Class 0.5, 5VA, ISF <=5 | Class 0.5, 5VA, ISF <=5 | | |
| F | Cable size (For Reference) | 1 Nos. 120 Sq. mm | 1 Nos. 300 Sq. mm/ 2 no 185 sqmm | 1 Nos. 300 Sq. mm/ 2 no.s 185 smm | 2 Nos. 300 Sq. mm | 3 Nos. 300 Sq. mm | | |
| 1 | Incoming Cable entry | From Bottom | | | | | | |
| 2 | Outgoing Cable entry | From Top | | | | | | |
| G | Changeover Switch | | | | | | | |
| 1 | Make | L&T, ABB, HPL, Siemens | | | | | | |
| 2 | Rating | 125A | 250A | 400A | 630A | 800 A | | |
| 3 | Type | Manual Type | | | | | | |
| 4 | Pole | FP | | | | | | |
| 5 | Voltage rating ($\pm 10\%$) | 415 V | | | | | | |
| F | Change over switch with phase barrier | To be provided | | | | | | |
| G | Guarantee Period | 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later | | | | | | |

| | | |
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| 5 | GENERAL CONSTRUCTION | |
| 5.1 | Panel Metal Box | <ol style="list-style-type: none"> The Metering panel shall be Metal enclosed with access from Front side. The Metering panel shall be of Dust & Vermin proof construction having IP 54 protection and adequate louvers for cooling. There should be wire mesh inside louvers with check-nut arrangement. Incoming Cable entry facilities at bottom of panel and removable gland plates of size suitable to accommodate incoming cables with desired cable sizes. Outgoing Cable entry facilities at top of panel and removable gland plates of size suitable to accommodate outgoing cables with desired cable sizes. Phase barriers should provide for change over switch. |

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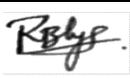
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| | | <ol style="list-style-type: none"> 6. Padlock arrangement be provided for change over switch operating handle. 7. There will be two door arrangement in Top side of Metering panel. One MS sheet openable door arrangement to be provided in between Meter and Outgoing busbar and second door to be provided above meter & control panel with locking arrangement. 8. I/C cable connection & O/G cable connection will be done on busbars. Hole size needs to be mentioned considering cable lug palm & hole position. 9. Removable acrylic insulation barrier sheet to be provided over both incoming busbars. 10. Minimum clearance between phases 25 mm & phase to neutral 20 mm. |
| 5.2 | Bus Bar | <ol style="list-style-type: none"> 1. Busbars shall be made of Electrical Grade Aluminium alloy and of suitable size to withstand the specified circuit rating. 2. The busbars will be supported with epoxy insulators and insulated with colour code sleeves. 3. Voltage tapping to be taken from busbar and not from changeover switch. 4. Size of hole as 12.5mm for cable lug termination for all at Termination. 5. Phase arrangement to be RYBN (from Left to Right) 6. Bus-bar arrangement should be staggered type for both incoming and outgoing cable termination. 7. Busbar aluminium current density should be less than 1A/sqmm. 8. Neutral busbar to be connected to with earth busbar via disconnecting link. Link size should be same as neutral busbar. |
| 5.3 | Metering compartment | <ol style="list-style-type: none"> 1. Adequate space for mounting TVM should be provided in compartment with suitable window with "Transparent Toughened Glass" shall be provided to view TVM readings from outside the compartment (without opening the door). The glass window to be aligned with meter display. Smart meter to get accommodated in the same space. 2. Provision to be provided for mounting the energy meter with max dimensions as L x B x D: 360 x 200 x 200 mm (Energy meter will be supplied by TPC). 3. Colour coded wires for the same to be provided. 4. Wiring provision to be made for MODEM through 2A fuse with holders and ferruling and length of wire should be sufficient to avoid loose connection. 5. Mounting plate to be provided for fixing of Meter & fuses. 6. Metering compartment should be separate from busbar compartment. |
| 5.4 | CT Details | <ol style="list-style-type: none"> 1. CT's will be provided by Tata power. All venders should collect CTs from Tata Power store and CTs to be mounted on panel as per approved GA drawing. 2. Transportation cost for collecting Tested CTs from TATA POWER warehouse is in OEM scope. 3. CT installation on busbar should ensure the manufacturing details are visible and same needs to be mentioned on metering & CT compartment door. The secondary terminal should be clearly visible and accessible for checking tightness. 4. Paper sticker to be pasted in CT compartment door mentioning CT Make, CT Serial no, phase, accuracy class & burden. 5. Colour coded wires to be provided from CT Secondary (s1 & s2 of each CT) to TVM Slot. CT secondary (S2 terminal) should be grounded. 6. Colour coded wires to be provided from Busbar to TVM Slot. 7. Ferruling to be done for CT/PT wires. |

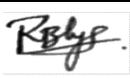
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| | | 8. CT secondary wiring to be properly dressed upto metering compartment. 9. The CT secondary S2 terminal to be looped and grounded at main earth busbar. |
| 5.5 | Power provision Supply for Modem | 1. Provision of 2A fuse and neutral link needs to be provided to extend to supply to the modem. 2. Pocket provision (140Lx 85Hx 40D mm) to be made in metering compartment door for installing modem and a hole provision with rubber grommet to be made for connecting wires to outside antenna. |
| 6.0 | NAME PLATE AND MARKING | <p>6.1 Name plate- On front door top left side-showing</p> <ol style="list-style-type: none"> 1) Purchaser name, PO number & SAP code 2) Manufacturer name 3) Month / year of manufacturing 4) 'Property of Tata Power' <p>6.2 Separate metallic name plate with Tata Power Logo of Dimension 6*6 Inches in clear font as shown below.</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p>Relationship between the two marks- size</p> <p>The Tata and Tata Power Marks are always used in conjunction with each other, never appearing in isolation on Tata Power communication.</p> <p>The height of the letter T of Tata (T-height) is the basic measure for all sizes and proportions.</p> <p>The rounded measure 2T in height, is separated from the Tata lettering by a distance of 1/2T.</p> <p>The T height of both, the Tata and the Tata Power Marks is to be the same, except in exceptional cases on approval from the Corporate Communications team.</p> </div> <div style="text-align: center; margin: 10px 0;">  <p>Centre aligned - Stacked (Preferred)</p> </div> <div style="text-align: center; margin: 10px 0;">  </div> <ol style="list-style-type: none"> 1) Marking for panel earth stud- Black letter 'E', on riveted Al label 2) Danger board in English & local language, riveted on doors- White colour background with Red lettering on 1.6mm thick Al plate. 3) Surface preparation for painting- Sand blasting or 7 tank processes. 4) Painting - Power coated grade A polyester paint with min thickness 120 micron. 5) SLD shall be engraved & pasted on inside of door. 6) Panel serial number to be provided. |

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| 7.0 | TESTS | <p>TESTING & INSPECTION Requirement: -</p> <p>7.1 Prototype to be offered for inspection and based on the observations rest of the order may be executed. Only type tested components – Switch, Fuses, Insulators & aluminium bus bar shall be accepted.</p> <p>7.2 Type Test: - Following Tests should be carried out as per IS/IEC 60947-3 : 2020 as per clause no.9.1.2 The verification of,</p> <ol style="list-style-type: none"> Constructional Requirements Temperature rise Test Dielectric properties Making & Breaking capacity & short circuit Test Operating Limits Operational performance Degree of protection of enclosed equipment <p>7.3 Routine test- (Inspection test witness by purchaser)</p> <ol style="list-style-type: none"> Visual inspection, dimension checks & paint thickness check. Bill of material check Insulation resistance test/ Dielectric Test High voltage test Operational check/Functional Check <p>7.4 Tolerances on panel dimensions- Maximum +/- 5mm</p> <p>7.5 No negative tolerance on bus bar dimensions & bus bar clearances</p> <p>7.6 Prototype panel to be approved by Tata Power for new vendors.</p> |
| 8.0 | TYPE TEST CERTIFICATES | <ol style="list-style-type: none"> The Bidder shall furnish the type test certificates of SFUs for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI / ERDA / NABL as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 10 years from the date of opening the bid. In case if type test conducted beyond 10 years then bidder to certify on letter head of parent OEM that no design change & no manufacturing plant change occurred from type tested product. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TATA POWER COMPANY. |
| 9.0 | PRE-DESPATCH INSPECTION | <ol style="list-style-type: none"> The Material shall be subject to inspection by a duly authorized representative of the TATA POWER COMPANY. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall always grant free access to the places of manufacture to TATA POWER COMPANY's representatives when the work is in progress. Inspection by the TATA POWER COMPANY or its authorized representatives shall not relieve the Bidder of his obligation of furnishing equipment in accordance with the specifications. TATA POWER COMPANY authorized representatives shall have the right to inspect the design, materials and workmanship and to report thereon, at any stage of manufacture, if found necessary. All facilities shall be extended to our representatives for witnessing the tests. Due notice shall be given to us to enable us to depute our representatives for stage inspection. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TATA POWER COMPANY. |

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| | | <p>3. Following documents shall be sent along with material</p> <ol style="list-style-type: none"> Test reports MDCC issued by TATA POWER COMPANY Invoice in duplicate Packing list Drawings & catalogue Guarantee / Warrantee card Delivery Challan Other Documents (as applicable). |
| 10.0 | INSPECTION AFTER RECEIPT AT STORE | <p>The material received at store will be inspected for acceptance and shall be liable for differences from the reports of the pre-dispatch inspection and one copy of the report shall be sent to TATA POWER COMPANY.</p> |
| 11.0 | GUARANTEE | <p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the TATA POWER COMPANY up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements) Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the TATA POWER COMPANY will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p> |
| 12.0 | PACKING | <ol style="list-style-type: none"> Packing protection- Against shocks, vibration & corrosion, damages during transportation Packing identification labels, to show purchaser name, PO number, and quantity of panels, Panel type, and Manufacturer serial number. Handling instruction- To be marked on packing boxes. Bidders should prefer to use recyclable & environmentally friendly materials for packing. No single use plastic to be used. |
| 13.0 | TENDER SAMPLE | NA |
| 14.0 | QUALITY CONTROL | <ol style="list-style-type: none"> The Bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TATA POWER COMPANY shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the Bid; the complete Lot shall be rejected. |

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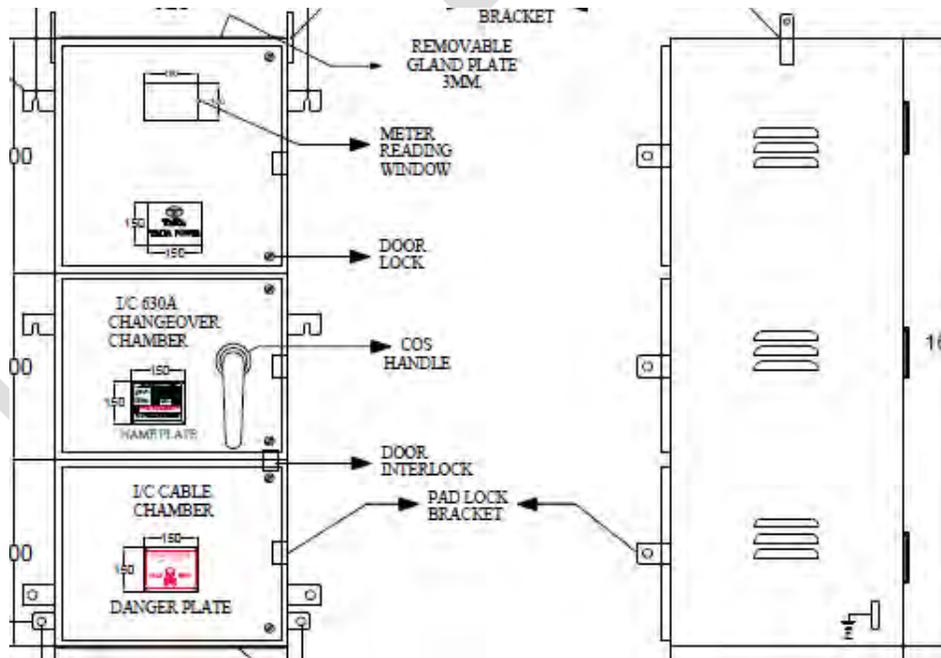
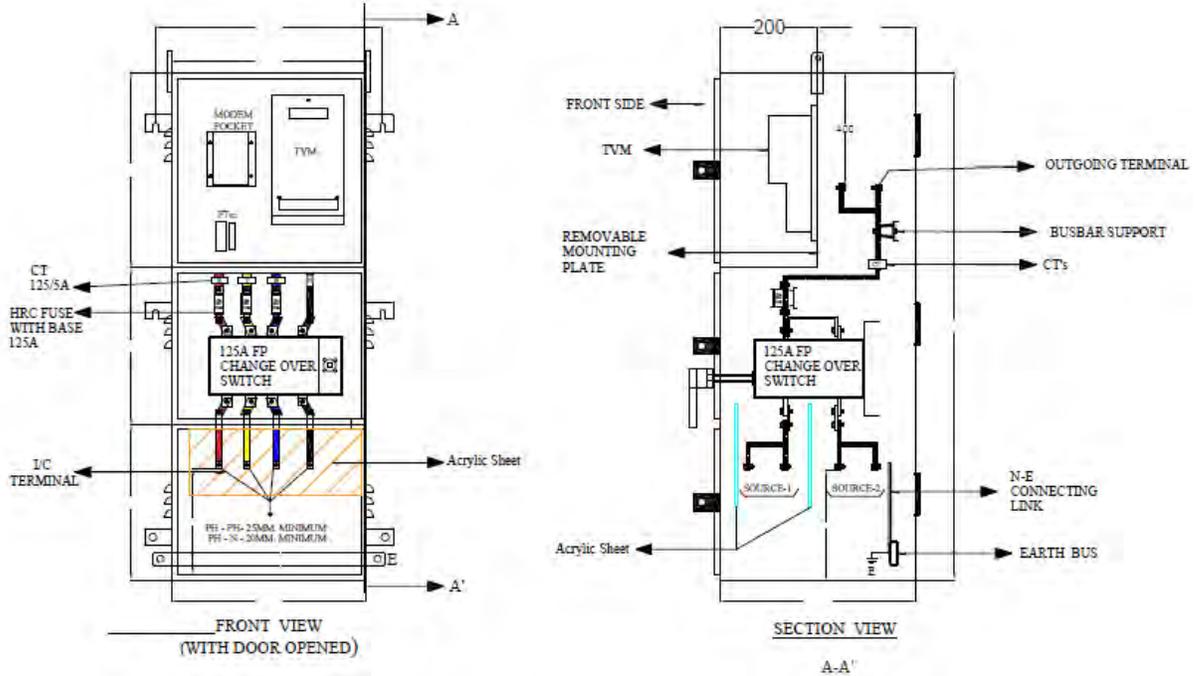
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| | | 2. TATA POWER COMPANY representative or its nominated representative shall have free access to the Bidder's works to carry out inspections. | | | | | | |
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| 15.0 | MINIMUM TESTING FACILITIES | Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards. | | | | | | |
| 16.0 | MANUFACTURING ACTIVITIES | The successful bidder will have to submit first GTP & Drawing with 7 days from placement of outline agreement for approval and complete the approval process within 14 days of outline agreement. The date of Code -2/ Code-1 approval given by TATA Power will be treated as first day for assessment of LD (if applicable). | | | | | | |
| 17.0 | SPARES, ACCESSORIES AND TOOLS | NA | | | | | | |
| 18.0 | DRAWINGS AND DOCUMENTS | <ol style="list-style-type: none"> 1. Following drawings and documents shall be prepared based on TATA POWER COMPANY specifications and statutory requirements and shall be submitted with the bid: <ol style="list-style-type: none"> a) Filled in Technical Particulars b) General description of the equipment and all components including brochures. c) General arrangement drawing. d) Bill of material e) Experience List f) Type test certificates 2. After the award of the contract copies of drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval 3. All the documents & drawings shall be in English language. | | | | | | |
| 19.0 | GUARANTEED TECHNICAL PARTICULARS | Bidders to comply for all above requirement of specifications clauses & submit signed and stamp copy as technical compliance document. | | | | | | |
| 20.0 | SCHEDULE OF DEVIATIONS | | | | | | | |
| <p><u>(TO BE ENCLOSED WITH THE BID)</u></p> <p>All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:</p> <table border="1" data-bbox="224 1444 1533 1577" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 15%;">Clause No.</th> <th style="width: 75%;">Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"></td> <td></td> <td></td> </tr> </tbody> </table> <p>We confirm that there are no deviations apart from those detailed above.</p> <p>Seal of the Company: _____</p> <p style="text-align: right;">Signature Designation</p> | | | Sr. No. | Clause No. | Details of deviation with justifications | | | |
| Sr. No. | Clause No. | Details of deviation with justifications | | | | | | |
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ANNEXURE I - Reference Drawings

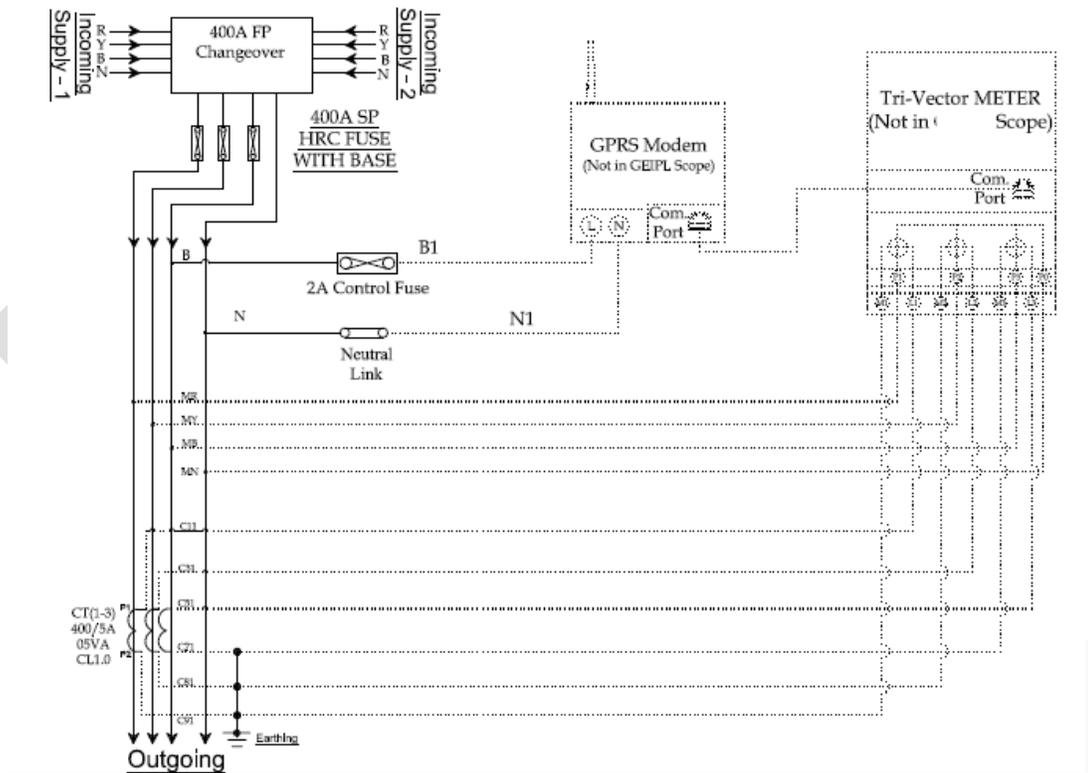
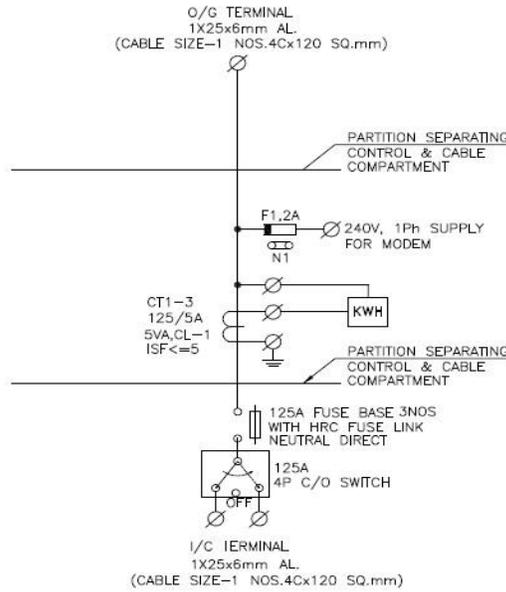
125/250/400/630A/800A SFU Changeover panel



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ANNEXURE II: Reference SLD

125/250/400/630A/800A SFU Changeover panel



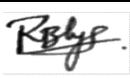
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ANNEXURE III: Inspection testing plan

1. Visual inspection, dimension checks & paint thickness check.
2. Bill of material check
3. Insulation resistance test/ Dielectric Test
4. High voltage test
5. Operational check/Functional Check

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AGREED TERMS & CONDITIONS (ATC)- Indigenous Supply

Bidder's Name: M/s. _____

RFQ ref. No. CC26VJS002

Enquiry Description: OLA of 1 year for Supply of LTP, FP, MP, SFU and Changeover Panels for Mumbai Distribution

Bidder's Offer Ref.: <pls mention your offer reference no here>

1. SUBMISSION OF THIS DOCUMENT DULY SIGNED, SHALL CONSTRUE THAT ALL THE CLAUSES OF AGREED TERMS AND CONDITIONS HAVE BEEN ACCEPTED BY YOU. PURCHASE ORDER, IF ANY, SHALL BE GOVERNED BY THE CONFIRMATION PROVIDED HERE.

| S. No. | Description | BIDDER'S RESPONSE |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| A | <u>TECHNICAL</u> | |
| 1 | Acceptance of technical specifications / scope of work including General/Technical notes as per Tender specification In case of deviation, confirm that the same has been furnished separately. | |
| 2 | Confirm data sheets duly filled in have been submitted, wherever required as requested in Technical specification/ Scope of work | |
| B | <u>COMMERCIAL</u> | |
| 3 | Bid Validity Confirm Bid Validity 180 days from date of bid submission. | |
| 4 | Firm price: | <i>Firm Price</i> |
| 5 | Delivery Terms Confirm delivery terms FOR basis | |
| 6 | Packing & Forwarding Confirm that Packing & Forwarding charges including Special Packaging Requirement (if applicable) are included in base price | |
| 7 | Freight Charges Confirm that Freight charges & Transit insurance are included in base price | |
| 8 | Taxes and duties: GST: __% HSN/ SAC Code: Any other tax as applicable: | |
| 9 | LD clause: Confirm that Bidder agrees to the LD clause mentioned in GTC | |
| 10 | Completion/Delivery Period: Mention your delivery timelines from the date of order | |
| 11 | Payment Terms Acceptance: Confirm acceptance as per GTC – Supply | |
| 12 | Warranty / Latent Defect Liability Period: Confirm acceptance as per GTC – Supply | |
| 13 | Contract Performance Bank Guarantee: Confirm acceptance to Submission of Unconditional Bank Guarantee as per GCC Supply. | |
| 14 | Testing and Inspection charges (if applicable): Confirm the quoted are Inclusive of all testing and inspection charges as per Tender specification | |

| S. No. | Description | BIDDER'S RESPONSE |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 15 | <p>Compliance to other terms & conditions</p> <p>Acceptance of all other terms & conditions as forming the Part of the RFQ/ Tender document and communicated vide subsequent addendum(s) if any:</p> <p>In case of deviation, confirm that the same has been furnished separately.</p> | |

*Bidders / Vendor shall note that in case of any contradiction between the Agreed Terms and Conditions (ATC); and the Bidders offer, the ATC shall prevail.

Bidder's Authorised Signatory and stamp:

Name:

The Tata Power Company Limited is hereunder referred to as the "Purchaser" or "Company". The person, firm or company selling the goods, the subject of this purchase order is referred to as "Vendor" or "Contractor". The subject of this purchase order is hereinafter referred to as the "Material(s)" or "Goods".

The Contract shall mean the contract as derived from the following:

1. Purchase Order (with 'Commercial Notes' and Annexures to the Purchase Order referred thereon)
2. Technical Specifications.
3. General Terms & Conditions

The documents including all reference document (s) and Annexures forming the Contract are to be read together as a whole and are to be taken as mutually explanatory.

1. Price:

Unless otherwise specifically stipulated, the price shall be firm and shall not be subject to escalation for any reason till the validity of this Contract.

Unless otherwise specifically stipulated, the price shall be inclusive of road/ rail worthy water-proof packing & forwarding charges up to effecting delivery at FOT/ FOR despatch point, GST and shall also be inclusive of inland freight, terminal taxes and entry taxes as leviable on the transportation or entry of goods into any local area limits pursuant to the Contract.

2. Taxes and Duties:

- 2.1 The Contract Price shall be inclusive of all taxes, duties, including but not limited to GST or any local taxes, levies imposed by State/Central/Local governments
- 2.2 Taxes as mentioned in the Contract Price or Price Schedule shall be paid to the contractor subject to the Contractor complying with all the statutory requirements and furnishing the relevant documents including error free invoices containing detailed break-up of the taxes
- 2.3 However the payment of GST or local levies shall be restricted to the total amount as indicated in the price schedule.
- 2.4 Any duties, levies or taxes not mentioned in Contract Price or Price Schedule but applicable as per any statute (s) shall be deemed to be

Rev. date: 25 July 2017

included in the Contract price and shall be to the account of the Contractor.

- 2.5 Any statutory variation in duties, levies or taxes if applicable and specified in this Contract till the scheduled date for supply of Goods and limited to direct invoices of the Contractor shall be to the account of Purchaser. The Contractor shall have the obligation to provide the necessary documentary evidence / supporting by way of gazetted notifications etc. to prove the change in such levies or taxes between the due date of submission of the Bid and the scheduled date of supply of goods to claim the difference.
- 2.6 The Contractor shall pass on to the Purchaser all the benefits of either reduction in tax rates, exemptions, concessions, rebate, set off, credits etc. or introduction of new tax rates exemptions, concessions, rebate, set off, credits etc. pertaining to all taxes, duties, imposts, fees and levies in respect of the supplies of Goods or performance of obligations under the contract. This would specifically include reduction of tax rates as a result of statutory changes or judicial rulings.
- 2.7 Any other taxes, levies and duties not mentioned in Contract Price or Price Schedule but applicable as per any statute (s) or introduction (omission) of new taxes, levies and duties shall be deemed to be included in the Contract Price and shall be to the account of the Contractor.
- 2.8 For facilitating availment of a credit, set-off, rebate, drawback or like benefit available to the Purchaser, the Contractor will facilitate the Purchaser by providing the necessary documentary and/or procedural support. In any process of assessment or re-assessment, of taxes payable by the Purchaser. Wherever expressly agreed the purchaser would provide the statutory form 'C' to the seller for availing the concessional rate of Central sales tax.
- 2.9 The Contractor shall bear and pay all the costs, liabilities, levies, interest, penalties in respect of non-compliances of any legal requirements as per various statutory provisions. The contractor shall keep the owner indemnified at all times from any tax liability, interest, penalties or assessments that may be imposed by the statutory authorities for non-compliances or non-observation of any statutory requirements by the Contractor.
- 2.10 Purchaser shall pay the invoices to the Vendor after necessary deductions as prescribed under the applicable law, income - tax or other

deductions under the State Tax laws as may be applicable to the Contract.

3 Packing details:

Packing details: The material must be packed in suitable packing to suit the mode of transport and to ensure its safe receipt at point of delivery. Any damage to material noticed at the time of delivery at site, due to improper packing or any other reason whatsoever shall be the responsibility of the Vendor. Such damaged goods shall be replaced within 14 days from intimation from the Purchaser.

4 Transportation and Unloading at Site:

The Vendor shall deliver the Material(s) at site/ Stores as per the delivery address specified in the Purchase order. The unloading at delivery shall be organised by the Purchaser unless otherwise specified. The receipt of the material/ equipment is subject to inspection and rejection if Material(s) is found unsatisfactory or any of the clauses under this purchase order are violated.

5 Insurance:

Unless otherwise specified, Purchaser will be responsible to obtain transit insurance for the Material(s). The Vendor shall intimate the Order Manager (as mentioned in the Purchase Order) along with Invoice, packing list, the Railway Receipt/Truck or Lorry Receipt etc. immediately after the consignment is booked, at the e-mail id mentioned in the Purchase order.

6 Payment Terms:

100% payment shall be made within 60 days from the receipt and acceptance of the material at the Consignee Stores/ Site/ Location as per the Contractual terms and conditions herein.

7 Bills and invoice:

The tax invoices should contain the details to comply with the GST Law. The supplier shall:

- i) Furnish (electronically) and communicate to the Owner, the details of Goods or Services supplied by the 10th of the month succeeding the said tax period,
- ii) Upon discovery of any discrepancy, rectify it and shall pay the tax and interest thereof,
- iii) Furnish the returns (electronically), for the inward and outward supplies of

Goods and/or Services, before the specified dates as per the GST Law,
iv) Communicate the tax paid, credits etc. as and when credited.

v) The Invoice should clearly state the description of the goods, quantity, sale price, tax %, and tax amount;

vi) The Invoice should be signed by an Authorized Signatory.

Bills/Invoices in the name of The Tata Power Company Ltd. with packing lists in triplicate shall be forwarded along with the equipment.

Contractor to furnish GST Registration no. in all invoices as well as Purchaser's (Tata Power's) GST no.

8 Transfer of Title and risk:

The transfer of property and risk of Material(s) shall be deemed to take place as follows:

a. For delivery F.O.R. or F.O.T. despatch point: Transfer of property on handing over the Material(s) to the carrier against receipt of clean Railway Receipt/Truck or Lorry Receipt and such receipt having been handed over to Purchaser. However, the risk of loss shall pass to the Purchaser on delivery of goods at the specified destination.

b. In case the Material(s) are procured by the Vendor from sub-vendors on receipt of duly endorsed documents of title to the goods.

9 Contract Performance Bank Guarantee (In case applicable):

9.1 The Vendor shall within 15 days of issue of this Purchase Order furnish an unconditional irrevocable bank guarantee duly stamped and strictly as per the prescribed format of the Purchaser from any nationalized bank or any scheduled bank having a branch in Mumbai and approved by the Purchaser for a sum equivalent to 10% of the Total value of Order valid for a period not less than 6 months from the expiry of the Warranty period.

9.2 Irrespective of the performance demonstrated as part of the Factory Acceptance Tests Take-over tests / Performance Tests etc, the Purchaser may call for re-validation of performance of the system during the performance guarantee period by conducting fresh performance tests if in its opinion, the

system is not able to deliver the designed performances based on its operational performance results. If the equipment fails to prove the performance during such performance tests, the Purchaser may allow the Vendor to either rectify the system by addition / modification of equipment etc at the Vendor's costs & risk to restore the performance levels. Failure to rectify the system to achieve the designed performance levels may result in imposition of penalties including revocation of the Performance Bank Guarantee and forfeiture of the entire amount under the Performance Guarantee.

- 9.3 In case the Vendor fails to furnish the requisite Bank Guarantee as stipulated above, then the Company shall have the option to terminate the contract besides other contractual remedies.

10 Price reduction:

- 10.1 The Vendor agrees that time of supply of Material(s) is of prime importance. If the Vendor fails to supply Material(s) before the respective scheduled / fixed date for supply. Company may without prejudice to any other right or remedy available to the Company: -

10.1.1 Recover from the Vendor ascertained and agreed, genuine pre-estimate liquidated damages, and not by way of penalty, a sum equivalent to 1% (of total value of order) per week or part thereof for each week's delay, beyond the scheduled supply date each subject to maximum of 10% of the total order value, even though the Company may accept delay in supply after the expiry of the scheduled supply date. The Company may, at its discretion, set off the aforesaid amounts from any other amounts owed by the Company to the Vendor or recover such amounts in other manner as may be permissible under applicable laws.

10.1.2 Arrange to get supply from elsewhere on account and at the sole risk of the Vendor, such decision of the Company being final and binding on the Vendor; or

10.1.3 Terminate the contract or a portion of supply of the supply work thereof, and if so desired, arrange for the supply in default by the Vendor to be attained from elsewhere at the sole risks and costs of the Vendor.

10.2 Liquidated damages for performance shortfall (if applicable) shall be specified in the Technical Specifications.

10.3 The Liquidated Damages referred in this clause 10 may be recovered by the Company from the Vendor as set off against any monies owed by the Company to the Vendor or in any other manner permissible under applicable laws.

11 Warranties:

11.1 Materials and Workmanship: Vendor shall fully warrant that all the stores, equipment and component supplied under the order shall be new and of first class quality according to the specifications and shall be free from defects (even concealed fault, deficiency in design, materials and workmanship).

11.2 Should any defects be noticed in design, material and/or workmanship within 12 months after the Material(s) or any portion thereof as the case may be have been commissioned or for 24 months from the date of delivery, whichever period concludes earlier. Purchaser shall inform Vendor and Vendor shall immediately on receipt of such intimation, depute their personnel within 7 days to investigate the causes of defects and arrange rectification/ replacement/modification of the defective equipment at site, without any cost to Purchaser within a reasonable period. If the Vendor fails to take proper corrective action to repair/replace defects satisfactorily within a reasonable period, Purchaser shall be free to take such corrective action as may be deemed necessary at Vendor's risk and cost after giving notice to the Vendor, including arranging supply of the Goods from elsewhere at the sole risk and cost of the Vendor.

11.3 In case defects are of such nature that equipment shall have to be taken to Vendor's work for rectification etc., Vendor shall take the equipment at his costs after giving necessary undertaking or security as may be required by Purchaser. After repair Vendor shall deliver the equipment at site on freight paid basis. Any taxes applicable in relation to this repair shall be to the Vendor's account. All risks in transit to and fro shall be borne by the Vendor.

11.4 Equipment or spare parts thereof replaced shall have further warranty for a period of 12 months from the date of acceptance.

12 Quality, Testing, inspection, installation:

12.1 All Material(s) supplied under this Contract shall be new and unused.

- 12.2 Wherever a specific Quality Assurance Plan is provided with the Request for Quotation (RFQ) or agreed as part of the commercial/ technical discussions, the same shall be binding on the Vendor.
- 12.3 The material shall be inspected
- a. At consignee end by Purchaser.
 - b. At factory premise of the Vendor/ sub-vendor by Purchaser or third party duly nominated by Purchaser. The Vendor shall extend all necessary co-operation to Purchaser/ third party inspector carrying out the inspection. The Inspector(s) shall have the right to carry out the inspection or testing, which will include inspection and testing of the raw materials at manufacturers shop, at fabricators shop and at the time of actual despatch before and/or after completion of packing.
- 12.4 The Vendor will inform Purchaser at least eight (8) days in advance of the exact place, date and time of tendering the Material(s) for required inspection and provide free access to the Inspector(s) during normal working hours at Vendor's or his/ its sub-Suppliers works, and place at the disposal of the Inspector(s) all useful means for undertaking the Inspection, checking the results of tests performed, marking the Material(s), getting additional tests conducted and final stamping of the Material(s).
- 12.5 Even if the inspection and tests are fully carried out, the Vendor shall not be absolved from its responsibilities to ensure that the Material(s), raw materials, components and other inputs are supplied strictly to conform and comply with all the requirements of the Contract at all stages, whether during manufacture and fabrication, or at the time of Delivery as on arrival at site and after its erection or start up or consumption, and during the defect liability period. The inspections and tests are merely intended to prima facie satisfy Purchaser that the Material(s) and the parts and components comply with the requirements of the Contract.
- 12.6 *All costs associated with the inspection shall be included in cost of Material(s).*
- 12.7 Original material test certificate/ performance test certificate/ fitment certificate/ test reports etc. relevant/ applicable as per the specifications/ standards shall be dispatched along with the material supply failing which the material may be rejected.
- 13 Rejection:**
- 13.1 Rejected goods shall be removed and replaced within 14 days of the date of communication of rejection.
- 13.2 Claim in respect of breakage/shortages in any cases shall be referred on the Vendor within ninety (90) days from the date of receipt of Goods by the Purchaser which shall be replaced/made good by the Vendor at his own cost. All risk of loss or damage to the material shall be upon the Vendor till it is delivered to the purchaser/consignee.
- 14 General Indemnity:**
- The Vendor shall indemnify and keep the Purchaser indemnified from and against any and all claims, costs, liabilities (financial), litigations, compensations, judgments, expenses or damages (including attorney's fees and other related expenses) arising out of any breach or alleged breach of any of the conditions of this Contract, performance of the obligations hereunder, or any representation or misrepresentation made by the Vendor or any third party with regard to the subject of this Contract.
- 15 Indemnity against IPR:**
- The equipment, system, drawings, and other materials that shall be supplied against the order will become the Purchaser's property. Without limitation of any liability of whatsoever nature, the Purchaser shall be indemnified and kept indemnified against any claim for infringement or breach of any of the statues, rules & regulations by the use of or sale of any article or material supplied by the Vendor. The indemnity shall include any infringement of patent, trade mark, design, copyright or other property rights whether in Country of Origin, or elsewhere resulting from the Vendor's design, manufacture, use, supply or re-supply & would also cover use or sale of any article or material supplied by the Vendor to the Purchaser under the Purchase Order. The Indemnity shall cover any claim/action taken by a third party either directly against the Purchaser or any claim/action made against the Vendor & where under the Purchaser is made liable. The

Indemnity shall be for losses, damages, and costs including litigation costs, attorney fees etc incurred by the Purchaser in relation to the Purchase Order.

16 Latent Defects Liability period (if applicable):

Notwithstanding the inspections, acceptance tests, quality checks etc carried out by the Vendor and witnessed/accepted by the Purchaser, the Vendor shall further warrant the equipment for any latent defects in its design, material or workmanship against the specifications set forth and shall make good any such defects by way of repair or replacement of the part or whole of the defective product at its own cost & risks as and when such latent defects are observed and intimated by the Purchaser and intimated to the Vendor within 36 months of completion of warranty period.

17 Force Majeure:

- 17.1 In the event of either party being rendered unable by force majeure to perform any obligation required to be performed by it under this Contract the relative obligation of the party affected by such force majeure shall, after notice under this articles be suspended for the period during which such cause lasts. The term 'Force Majeure' as employed herein shall mean acts of God, wars (declared or undeclared), riots or civil commotion, fire, floods, and acts and regulations of the Government of India or State Government or any of the statutory agencies. Both the party shall pay to the other party, the amount payable upon the date of the occurrence of such force majeure.
- 17.2 Upon the occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid, thereby shall notify the other party in writing immediately but not later than twenty four (24) hours of the alleged beginning and ending thereof giving full particulars and satisfactory evidence in support of the claims.
- 17.3 During the period, the obligations of the parties are suspended by force majeure, the contractor shall not be entitled to payment of any rate.
- 17.4 In the event of the force majeure conditions continuing or reasonably expected to continue for a period more than thirty (30) days, Purchaser shall have the option of terminating the contract by giving seven (7) days notice thereof to the contractor.

18 Variation:

Except for any provisions in this Purchase Order, any change /modification to the terms and conditions of this Order can be issued only by Purchaser or with the prior written approval from Purchaser.

19 Termination

- 19.1 The Contract shall be deemed to be terminated on completion of delivery of Material(s)
- 19.2 Termination of Default by Vendor:
Purchaser may terminate the contract at any time if the Vendor fails to carry out any of his obligations including timely delivery under this Contract. Prior to termination, the Vendor shall be advised in writing of the causes of unsatisfactory performance to be improved upon 15 days of the receipt of notice. In case, if the Vendor fails to bring about the improvement to the satisfaction of the Purchaser, then the order shall be terminated.
- 19.3 Without prejudice to the rights and remedies available to Purchaser, Purchaser may terminate the Contract or part thereof with immediate effect with written notice to the Vendor if,:
- 19.3.1 The Vendor becomes bankrupt or goes into liquidation.
- 19.3.2 The Vendor makes a general assignment for the benefit of creditors.
- 19.3.3 A receiver is appointed for any substantial property owned by the Vendor.
- 19.3.4 The Vendor has misrepresented to Purchaser, acting on which misrepresentation Purchaser has placed the Purchase Order on the Vendor.

The Vendor/ Contractor shall not be entitled to any further payment under the Contract if the Contract is terminated. If the order is terminated under clause 19.2 and 19.3, the Vendor shall not be entitled to any further payment, except that, if Purchaser completes the supply of Material(s) and the costs of completion are less than the Total Order value, the Purchaser shall pay Vendor an amount properly allocable to supply of Material(s) fully performed by Vendor prior to termination for which payment was not made to Vendor. In case, the cost of completion of Material(s) exceed the total Order value, the additional cost incurred by Purchaser for such completion shall be paid by the Vendor.

19.4 Purchaser shall be entitled to terminate the Contract at its convenience, at any time by giving thirty (30) Days prior notice to the Contractor. Such notice of termination shall specify that termination is for Companies convenience and the date upon which such termination becomes effective. Upon receipt of such notice, the Contractor shall proceed as follows:

- 19.4.1 cease all further work, except for such work as may be necessary and instructed by the Company/ Company's representative for the purpose of protecting those parts of the supplies already manufactured;
- 19.4.2 stop all further sub-contracting or purchasing activity, and terminate Sub-contracts;
- 19.4.3 handover all Documents, equipment, materials and spares relating to the supply of goods prepared by the Contractor or procured from other sources up to the date of termination for which the Contractor has received payment equivalent to the value thereof; and
- 19.4.4 handover those parts of the supplies manufactured by the Contractor up to the date of termination.

Upon termination pursuant to clause 19.4, the Vendor shall be entitled to be paid the full value on the Material(s) delivered in accordance with the Contract.

19.5 The Contractor shall not be released from any of his obligations or liabilities accrued under the Contract on termination. For the avoidance of doubt, the termination of the Contract in accordance with this clause shall neither relieve the Contractor of his accrued obligations for Warranty or his accrued liability to pay (liquidated) damages for Delay nor shall entitle him to reduce the value of Performance Security.

20 Sub letting and assignment:

The contractor shall not without prior consent in writing of the Purchaser, sublet, transfer or assign the contract or any part thereof or interest therein or benefit or advantage thereof in any manner whatsoever, provided nevertheless that any such consent shall not relieve the contractor from any obligation, duty or responsibility under the contract.

21 Dispute Resolution:

Dispute or differences arising out or relating to this Order shall be resolved amicably by the parties. Failing such amicable resolution of dispute / differences either party may refer the matter to arbitration of a Sole Arbitrator to be appointed jointly by both the parties. The award of the Arbitrator shall be final, binding and conclusive on the parties. The venue for arbitration shall be Mumbai. The Arbitration proceedings will be governed and regulated by the provisions of Indian Arbitration and Conciliation Act, 1996 as amended from time to time and the rules framed there under.

22 Governing laws

This Contract shall be construed in accordance with and governed by the Laws of India without giving effect to any principle of conflict of law.

23 Jurisdiction

This Contract and the transaction contemplated herein shall be subject to the exclusive jurisdiction of the competent Courts in Mumbai only.

24 Limitation of Liability

Notwithstanding anything contained in the Contract, the Contractor's aggregate liability under this Contract shall be limited 100% of the Total order value. This shall however, exclude liability arising pursuant to clause 2.8- tax indemnity, clause 14- General Indemnity, clause 15- Indemnity against IPR, clause 25 – Confidentiality and liabilities arising due to wilful misconduct, gross negligence, third party claims and corrupt acts attributable to the Vendor.

25 Confidentiality:

The Vendor shall use the Confidential Information of the Purchaser only in furtherance of this Contract and shall not transfer or otherwise disclose the Confidential Information to any third party. The Vendor shall (i) give access to such Confidential Information solely to those employees with a need to have access thereto; and (ii) take the same security precautions to protect against disclosure or unauthorized use of such Confidential Information that the party takes with its own confidential information but, in no

event, shall a party apply less than a reasonable standard of care to prevent such disclosure or unauthorized use.

26 Consequential Damages:

Unless otherwise specified, neither Party shall be responsible for and nor shall be liable to the other Party for indirect/consequential losses and damages suffered by such Party including for loss of use, loss of profit whether such liability or claims are based upon any negligence on the part of the other Party or its employees in connection with the performance of the Purchase Order.

27 New Legislation (The Micro, Small and Medium Enterprise Development Act 2006)

- a. This Act has been enacted and made effective from 2nd October 2006. The Interest on Delayed Payments to Small Scale and Ancillary Industrial Undertaking Act, 1993 is repealed.
- b. Vendor is requested to inform the purchaser if vendor fall under The Micro, Small and Medium Enterprises Development Act, 2006 legislation and provide the purchaser, registration number and date to enable purchaser to take necessary care. The vendors are also requested to mention the same on their invoice / bill.

28 Relation between parties:

The Purchase Order shall be entered into on a principal-to-principal basis only. The Purchase order shall not be construed as a partnership or an association of persons. There is no agent and principal relationship between the parties. Each party shall be responsible for its own conduct. The Vendor shall ensure at all times that all the work carried out under this contract either by its own person or through any of its sub-Vendors shall be always done under its own direct supervision.

29 Environment / ISO 14001 Certification:

The Vendor to confirm whether their organization is ISO 14001 certified. If not, the Vendor must certify that the handling, use and disposal of their product / by-products conform to practices consistent with sound environmental management and local statutes. The Vendor shall ensure that all the wastes are disposed in environmental friendly way with strict compliance to applicable laws including

adherence to MoEF guidelines with respect to disposal of batteries, lead waste, copper cables, ash, waste oil, e-waste etc which shall be disposed through MoEF approved parties only. The Vendor shall also be responsible to collect and recycle all the e-waste generated at the end of the product life cycle at its own costs and risks as per the MoEF guidelines/ orders.

30 Tata Code of Conduct

The Purchaser abides by the Tata Code of Conduct in all its dealing with stake holders and the same shall be binding on the Purchaser and the Vendor for dealings under this Purchase Order. A copy of the Tata Code of Conduct is available at our website: <http://www.tatapower.com/aboutus/code-of-conduct.aspx>. The Vendor is requested to bring any concerns regarding this to the notice of our Chief Ethics Officer on the e-mail ID: cecounsellor@tatapower.com.

31 Responsible Supply Chain Management:

The Purchaser is committed for a cleaner environment and respect of Human rights through its Responsible Supply Chain Management policy. The Vendor is required to comply with all the environment & Human rights related laws, including emission norms, Labour and environmental regulations. The Purchaser encourages its Vendors/ Contractors/ Business partners to pay more attention to green design, green supply, green production, green logistics and green packaging in performing their business obligations.

The Vendor is required to abide by the Tata Power Corporate Environment policy, Energy Conservation and Corporate Sustainability Policy.

A copy of the Responsible Supply Chain Management Policy along with Environment policy, Energy Conservation policy, Sustainability policy, Health & Safety policy and Human Rights policy is available at website: <http://www.tatapower.com/sustainability/policies.aspx>.

Vendor/Bidder is required to completely fill the attached "Supplier Sustainability Questionnaire" in support of their Green Supply Chain Management initiatives and submit the same with their offer.

The Owner recognizes that diversity in the workplace positively impacts business. The Owner is committed to help people from SC/ST background either by helping them to become entrepreneurs or by engaging workforce from SC/ST community under the contracts agreed herein. To encourage engaging SC/ST community, the owner may consider on the merit to incentivize the Contractor by paying additional 1% of the service contract portion if the number of SC/ST workforce engaged in the contract exceeds 30% of the total deployed strength and 2%, if the strength goes beyond 50%. While the Contractor will assist the workforce so engaged to become self-reliant in meeting the work expectation, the Owner may also volunteer its training resources to the extent possible to improve their employability. The Contractor shall maintain the proper documentation of such category of the workforce engaged and the owner may consider to pay the incentive after its verification.

The Owner may also consider extending price preference of 5% in the bid evaluation for an order value up to Rs.50 Lacs, provided the company is owned by a person from SC/ST community having minimum 50% holding in the company.

32 Vendor rating

You are requested to ensure compliance to the terms of the individual orders with regards to timely delivery, provision of all applicable documents / challans / test certificate, quality of the material etc. Your performance with respect to the said factors will be taken into consideration for future business.

33 Vendor Feedback:

- 33.1 In this dealing Vendors feedback is important for the purchaser to improve its processes. If vendor have to report any grievance, problem or require any clarification, information, vendor is requested to contact purchaser at email ID: CC_CUSTOMERFEEDBACK@tatapower.com
- 33.2 Vendor is requested to ensure compliance to the terms of the individual orders with regards to timely delivery, provision of all applicable documents / challans / test certificate, quality of the material etc. Vendor performance with

respect to the said factors will be taken into consideration for future business.

34 Non-Waiver:

Failure of Purchaser or its representatives to insist upon adherence to any of the terms or conditions incorporated in the Contract or failure or delay to exercise any right or remedies herein or by law accruing, or failure to promptly notify the Vendor in the event of breach or the acceptance of or the payment of any Material(s) hereunder or approval of any design or Material(s) shall not release the Vendor and shall not be deemed a waiver of any right of Purchaser to insist upon the strict performance thereof or of any of its rights or remedies as to any such Material(s) regardless of when the Material(s) are shipped, received or accepted not shall any purported oral modification or revisions of the Contract by Purchaser or its representative(s) act as waiver of the terms hereof.

35 Repeat Order:

Purchaser may place the repeat order for 100% of ordered quantities within a span of 6 months from the date of issue of this Purchase Order & Vendor shall execute it at same rates, terms and conditions.

36 Severability

If any provision of this Contract is invalid, unenforceable or prohibited by law, this Contract shall be considered divisible as to such provision and such provision shall be inoperative and shall not be part of the consideration moving from any Party hereto to the others, and the remainder of this Contract shall be valid, binding and of like effect as though such provision was not included herein.

ESG FRAMEWORK FOR BUSINESS ASSOCIATES

Tata Power's Sustainability philosophy sits at the core of its Business Strategy. Tata Power Sustainability Model has an overarching objective of 'Leadership with care' with key elements of 'Care for the Environment'; 'Care for the Community'; 'Care for our Customers / Partners' and 'Care for our People'. These sustainability objectives encompass the Environmental, Social and Governance objectives driven as integrated elements.

Tata Power, together with its stakeholders is determined to achieve sustainable growth while creating shared value for all.

As a part of future ready roadmap, Tata Power has targeted following as our Environment, Social and Governance priorities:

- Being Carbon Net Zero before 2045
- Growing Clean capacity (80% by 2030)
- Customer centricity
- Becoming water neutral before 2030
- Achieving zero waste to landfill before 2030
- No net loss of biodiversity before 2030
- Positively impacting 80 million lives by 2027

In order to create a sustainable business ecosystem, Tata Power expects that all its Business Associates (BA) which includes its suppliers, vendors, consultants and service providers to align to its ESG and sustainability commitments.

Tata Power encourages improved efficiencies and scaling up of green initiatives through technology and innovation taking us farther on the journey of reducing carbon emissions and preparing the entire eco-system towards products and services that would have net positive impact on the environment and communities that we operate in.

The Vendors/ bidders wishing to associate with Tata Power are expected to share their own sustainability and ESG journey. We at Tata Power promote all Business Associates to have a sustainable procurement policy for their supplier and service providers to contribute to our integrated approach in achieving a sustainable supply chain. The BA is encouraged to carry out the assessment of their sub-contractors and sub-vendors on sustainability readiness so that they are aware of the expectation/ business requirement.

The Vendor/ Bidder shall fill-in the 'Environment, Social and Governance Compliance Screening Questionnaire for Business Associates' attached at Annexure-I and submit the same along with the Bid in Ariba online platform.

Responsible Supply Chain Management:

Tata Power is committed for a cleaner environment and respect of Human rights through its Responsible Supply Chain Management policy.

Tata Power Business Associate (BA) shall comply with all the environment & Human rights related laws, including emission norms, Labour and environmental regulations.

Tata Power encourages its BA to focus on green design, green supply, green production, green logistics and green packaging in performing their business obligations. The BA is expected to abide by the Tata Power Corporate Environment policy, Energy Conservation and Corporate Sustainability Policy (enclosed with this document as Annexure-II).

The BA is expected to:

- Strive towards Conservation of Energy, Water, Resources and optimize transportation of Men & Materials to minimize environmental impact and reduce carbon footprint.
- Carry out the assessment of materials used for construction, operation & maintenance, consumables and accordingly phase out those materials which are environmentally hazardous.
- Be cognizant that diversity in the workplace positively impacts business.
- Promote affirmative action by supporting people from SC/ ST background by engaging workforce from SC/ ST community under the contracts agreed herein.
- Share the commitment of 'No child labour', 'No forced labour', Non-discrimination on the basis of caste, colour, religion, gender, disability, maternity or pregnancy or any other factor unrelated to the requirements of the job
- Pay the wages or remuneration to the workforce, personnel deployed in compliance to all applicable laws and regulations.
- Provide its employees/ deployed labor with an employment environment that is free of physical or psychological harassment.
- Carry out the assessment of their Sub-contractors on their Sustainability Readiness so that they are aware of the above expectation/ standards
- To ensure usage of suitable package material which is more environmentally sustainable. Further the packing material shall be recycled to the extent possible. The material used for packing is expected to suit the mode of transport and to ensure its safe receipt at point of delivery.

Waste Disposal:

The BA is expected to follow best practices for disposal of waste, few of which are listed below:

- Have a detailed project plan that includes the waste management, segregation of all designated waste material (Recyclable/ Non-Recyclable), collecting, storing, disposing and transferring the same to pre-arranged facility/ destination in timely and safe manner as per environmental legislations. The project plan shall also include the innovative construction practice to eliminate or minimize waste, protect surface/ground water, control dust and other emissions to air and control noise.
- Have purchase policy to encourage the procurement of material with recycled and minimum packaging of goods during delivery and appropriate means for site-to-site transportation of materials to avoid damage and litter generation.
- Ensure that the residents living near the site are kept informed about proposed working schedule and timings/ duration of any abnormal noise full activity that is likely to happen.
- Ensure the regular maintenance and monitoring of vehicles and equipment for efficient fuel use so that emissions and noise are within acceptable limits to avoid air pollution.

Water Management:

The BA is expected to follow best practices for water management, few of which include a management and monitoring system for water withdrawals and consumption, procedures to reduce water usage or reuse/recycle water, and pretreatment of wastewater before disposal.

Compliance to Law:

The BA shall adhere to responsible business practices and comply with the provision of all the Statutory Acts Applicable. Special attention of the BA is drawn towards the compliance of provision of the following statutes: (along with the latest amendments/additions, as applicable):

- The Child Labour (Prohibition and Regulation) ACT, 1986.
- The Contract Labour (Regulation and Abolition) ACT, 1970.
- The Employee's Pension Scheme, 1995.
- The Employee's Provident Funds and miscellaneous provisions Act, 1952.
- The Employees State Insurance Act, 1948.
- The Equal Remuneration Act, 1976.
- The Industrial Disputes Act, 1947.
- The Maternity Benefit Act, 1961.
- The Minimum Wages Act, 1948.
- The Payment of Bonus Act, 1965
- The Payment of Gratuity Act, 1972.
- The Payment of Wages Act, 1936.
- The Shops & Establishment Act, 1954.
- The Workmen's Compensation Act, 1923.
- The Employer's Liability Act, 1938.
- and any other applicable statutory act

Social Accountability (SA 8000):

Tata Power expects its BAs to follow guidelines of SA 8000:2014 on the following aspects

- Child Labour
- Forced or Compulsory Labour
- Health & Safety
- Freedom of Association & Right to Collective Bargaining
- Discrimination
- Disciplinary Practices
- Working Hours
- Remuneration
- Management System

Health and Safety

The BA is expected to ensure the health and safety of his and his Sub-contractor's staff and labour. The BA shall, in collaboration with and according to the requirements of the local health authorities, ensure that medical staff, first aid facilities, sick bay and ambulance service are available at the accommodation and on the Site at all times, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The BA shall maintain records and make reports concerning health, safety and welfare of persons deployed, and damage to property, as the Owner's Representative may reasonably require. The BA shall be responsible for the medical treatment / hospitalization of his and his Sub-contractor's staff/ labour.

The BA shall appoint a qualified Safety officer at the Site to be responsible for maintaining the safety, and protection against accidents, of all personnel on the Site. Such Safety officer shall have the authority to issue instructions and take protective measures to prevent accidents.

The BA shall comply in toto with the Tata Power's Contractor Safety Terms & Conditions, Health Safety & Environment Manual while working on Tata Power Site/ Services/ Contracts.

Grievance Mechanism

The BA is expected to have grievance procedures that allow stakeholders to anonymously bring environmental and/or work-related violations and/or concerns to the attention of management. In addition, the BA is expected to have procedures for examining reports of environmental and/or work-related violations or concerns and/or privacy complaints.

Data Protection

The BA is expected to have a formal process to address data security or privacy issues.

ANNEXURE-I



| Sr. No. | Question Description | Response (Y/N) | Remarks |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|
| Organization | | | |
| 1 | Does your Company have Sustainability Policy at Organization Level? If Yes, Please attach | | |
| 2 | Do you have sustainable procurement policy in place for your own suppliers? If Yes, Please attach | | |
| 3 | Does your company do regular assessment of its suppliers on ESG parameters? | | |
| 4 | Are there ESG risks, or negative impacts identified in your supply chain | | |
| Governance | | | |
| 1 | Is diversity taken into consideration when appointing board members/ senior management? Do you have an independent director/s? | | |
| 2 | Has your company taken initiatives to ensure ethical practices at workplace? Please share the details, Policies etc. | | |
| 3 | Does your company have a formal process to address data security or privacy issues? Please share the details, Policies etc. | | |
| 4 | Does your company have grievance mechanism for stakeholder issues and track resolution? | | |
| Environment/ Planet | | | |
| 1 | Does your company have Environmental Policy? If Yes, Please attach | | |
| 2 | Do you have a formal process for waste management including solid wastes, liquid wastes and hazardous waste? | | |
| 3 | Does your company track greenhouse gas emission? Also, what percentage of own consumption comes from the renewable energy? | | |
| 4 | Does your company have a formal process for water management including monitoring of water consumption and withdrawals, and if applicable, pretreatment of wastewater? | | |
| Green Technology/ Innovation | | | |
| 1 | Are your facility/ Product/ Services provided by you is based on green design, green production, green packaging or green logistics considerations? Please elaborate. | | |
| 2 | Do your products or services have any environmental or social features or benefits (e.g. environmental/energy certification, ecolabels, fair trade certification, etc.)? | | |
| Social/ People | | | |
| 1 | Does you facility/ Company have written personnel policies in place Are you an equal opportunity employer? | | |
| 2 | Please describe any formal programme / campaign in place to promote company involvement with the community (volunteering, etc.). What is the percentage of profit spend on community activities? | | |
| 3 | Does your company have a written Health & Safety Policy or Program? If Yes, Please attach | | |
| Certifications: Does your company have following certifications (valid till date-please mention validity) | | | |
| 1 | ISO9001 accreditation | | |
| 2 | SA8000 or equivalent | | |
| 3 | ISO 14001 certification | | |
| 4 | ISO 18001/45001 or equivalent | | |
| 5 | ISO/IEC 27001 or equivalent | | |
| 6 | Any Other (Please specify) | | |

Signature

Business Associate Name

ANNEXURE-II

CORPORATE SUSTAINABILITY POLICY

At Tata Power, our Sustainability Policy integrates economic progress, social responsibility and environmental concerns with the objective of improving quality of life. We believe in integrating our business values and operations to meet the expectations of our customers, employees, partners, investors, communities and public at large

- We will uphold the values of honesty, partnership and fairness in our relationship with stakeholders
- We shall provide and maintain a clean, healthy and safe working environment for employees, customers, partners and the community
- We will strive to consistently enhance our value proposition to the customers and adhere to our promised standards of service delivery
- We will respect the universal declaration of human rights, International Labour Organization's fundamental conventions on core labour standards and operate as an equal opportunities employer
- We shall encourage and support our partners to adopt responsible business policies, Business Ethics and our Code of Conduct Standards
- We will continue to serve our communities:
 - By implementing sustainable Community Development Programmes including through public/private partnerships in and around our area of operations
 - By constantly protecting ecology, maintaining and renewing bio-diversity and wherever necessary conserving and protecting wild life, particularly endangered species
 - By encouraging our employees to serve communities by volunteering and by sharing their skills and expertise
 - By striving to deploy sustainable technologies and processes in all our operations and use scarce natural resources efficiently in our facilities
 - We will also help communities that are affected by natural calamities or untoward incidence, or that are physically challenged in line with the Tata Group's efforts

The management will commit all the necessary resources required to meet the goals of Corporate Sustainability.



(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018



Supplier Code of Conduct

Tata Power follows the Tata Code of Conduct (TCoC) and the Whistle blower Policy and expect all its Suppliers to adhere to the same principles. “Supplier” here means any business, company, corporation, person or other entity that provides, sells or seeks to sell, any kind of goods or services to Tata Power, including the Supplier’s employees, agents and other representatives.

Tata Code of Conduct- (TCoC): <https://www.tatapower.com/pdf/aboutus/Tata-Code-of-Conduct.pdf>

Whistle Blower Policy: <https://www.tatapower.com/pdf/aboutus/whistle-blower-policy-and-vigil-mechanism.pdf>

Anti-Bribery & Anti-Corruption Policy: <https://www.tatapower.com/pdf/aboutus/abac-policy.pdf>

The suppliers are expected to adhere to the following Do’s and Don’ts:

Do’s

1. The Suppliers shall be committed to supplying products and services of high quality that meet all applicable standards and laws, including product packaging, labelling and after-sales service obligations.
2. Comply with all applicable laws and regulations, both in letter and in spirit, in all the territories in which it operates.
3. Strive to provide a safe, healthy and clean working environment for its employees.
4. Strive for environmental sustainability, particularly with regard to the emission of greenhouse gases, consumption of water and energy and the management of waste and hazardous materials.
5. The Supplier shall represent our company (including Tata brand) only with duly authorised written permission from our company.
6. Safeguard the confidentiality on the use of intellectual property, information and data of the Company.
7. Gifts and hospitality given or received should be modest in value and appropriate as per Company Policy.
8. The assets of Tata Power shall be employed primarily and judiciously for the purpose of conducting the business for which they are duly authorised.
9. All actual or potential conflicts due to financial or any other relationship with a Tata Power employee shall be disclosed.

Don’ts

1. The Supplier shall not make unfair or misleading statements about the products and services of competitors.
2. Children shall not be employed at workplaces.
3. Forced labour shall not be used in any form.
4. The Suppliers shall neither receive nor offer or make, directly or indirectly, any illegal payments, remunerations, gifts, donations or comparable benefits that are intended, or perceived, to obtain uncompetitive favours for the conduct of its business with Tata Power.

Reporting Violations

The Supplier shall notify the Company regarding any known or suspected improper behaviour of other suppliers or employees relating to its dealings with Tata Power, by email to: cecounsellor@tatapower.com. The same can also be raised through our 3rd party ethics helpline facility:

| | |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Toll-free Number | 1800 267 4065 |
| Email | tatapower@tip-offs.in |
| Website & Chatbot | www.tatapower.tip-offs.in |
| Postal address | Attn to: Mr. Puneet Arora, Deloitte Touch Tohmtsu India LLP, 6 floor, AIPL Business, Sector 62, Gurugram, Haryana 122102 |