



NIT No.: TPCODL/P&S/100000189/2021-22

Procedure to Participate in Tender

Tender Enquiry No- TPCODL/P&S/1000000189/2021-22

Tender Enquiry No.	Work Description	Estimated Tender Cost (Rs. Cr.)	EMD (Rs.)	Tender Fee (Rs.)	Last Date for payment of Tender Fee
TPCODL/P&S/1000000189/21-22	Electrification of UEHHS by providing Service Connection under PMAY-G and BGJY schemes	15.00	2,00,000	5,000	09.04.2022

* EMD is exempted for MSMEs registered in the State of Odisha.

** MSMEs registered in the State of Odisha shall pay tender fee of Rs. 1,000/- including GST.

Please note that corresponding details mentioned in this document will supersede any other details mentioned anywhere else in the Tender Document.

Procedure to Participate in Tender.

Following steps are to be followed before “Last date for Payment of Tender Fee”:

1. Eligible and Interested Bidders to submit duly signed and stamped letter on Bidder's letter head indicating
 - a. Tender Enquiry number
 - b. Name of authorized person
 - c. Contact number
 - d. E-mail id
 - e. Details of submission of Tender Fee
 - f. GST Registration No
 - g. Details of submission of Tender Fee
 - h. MSME Certificate, wherever applicable
 - i. Details of Bank Account for refund of EMD
 - j. Postal Address for refund of EMD
2. 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/ Enquiry Number –

Beneficiary Name: TP Central Odisha Distribution Ltd.
Bank Name: STATE BANK OF INDIA
Branch Name: IDCO Towers, Bhubaneswar
Address: P.O. - Sahidnagar, Janapath, Bhubaneswar.
Branch Code: 7891
Account No: 10835304915
IFSC Code: SBIN0007891



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E-mail with necessary attachment of 1 and 2 above to be sent to imran.ahmad@tpcentralodisha.com with copy to sudhakar.behera@tpcentralodisha.com before last date and time for payment of Tender Fee.

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

Please note that all future correspondence regarding the tender, bid submission, due date extension, Pre-bid query, etc. will take place through TPCODL E-Tender system (Ariba) only. User manual to guide the bidders to submit the bid through E-Tender system (Ariba) is enclosed.

All communication shall be held only with the bidders who have carried out the above steps to participate in the Tender.

It is to be noted that once date of “Last date and time for Payment of Tender Participation Fee” is lapsed, no Bidder will be sent link from TPCODL E-Tender System (Ariba). Without this link, bidder will not be able to participate in the tender. Any last moment request to participate in tender will not be considered.

Further, all future corrigendum to the said tender will be uploaded in the Tender section on website <https://www.tpcentralodisha.com>.



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OPEN TENDER NOTIFICATION

FOR

**ELECTRIFICATION OF UNELECTRIFIED
HOUSEHOLDS (UEHH) BY PROVIDING SERVICE
CONNECTION UNDER PMAY-G AND BIJU
GRAMIN JYOTI YOJANA (BGJY) SCHEMES**

Tender Enquiry No.: TPCODL/P&S/1000000189/21-22

Due Date for Bid Submission: 29.04.2022 [15:00 Hrs.]

**TP Central Odisha Distribution Limited
2nd Floor, IDCO Towers, Janpath, Bhubaneswar – 751022**



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1.0 Event Information

1.1. Scope of work

Open Tenders are invited from interested Bidders entering into a Rate Contract valid for one year for the following:

S. No.	Description	EMD Amount (Rs.)	Tender Fee (Rs.)
1.	Electrification of UEHs by providing Service Connection under PMAY-G and BGJY schemes	2,00,000	5,000

Note: Tender Fee is inclusive of GST

1.2. Availability of Tender Documents

Please refer "Procedure to participate in the e-tender".

1.3. Calendar of Events

(a)	Date of sale/ availability of tender documents from TPCODL Website	From 30.03.2022 onwards
(b)	Date by which Interested and Eligible Bidder to pay Tender Fee and confirm participation as mentioned in "Procedure to Participate in Tender"	09.04.2022
(c)	Last Date of receipt of pre-bid queries, if any	11.04.2022
(d)	Pre-Bid Meeting*	13.04.2022
(e)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	18.04.2022
(f)	Last date and time of receipt of Bids	29.04.2022; 15:00 Hours
(g)	Date & Time of opening technical bids & EMD (Envelope-1 & 2)	Participating Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Technical Bids are opened.
(h)	Date & Time of opening of Price bid of qualified bidders	Bidders will get mail intimation from TPCODL E-tender system (Ariba) when their Price Bids are opened

**Pre-Bid Meeting Time and Venue details shall be shared later*

Note :- In the event of last date specified for submission of bids and date of opening of bids is declared as a closed holiday for TPCODL's office, the last date of submission of bids and date of opening of bids will be the day following working day at appointed times.

1.4 Mandatory documents required along with the Bid

1.4.1 EMD of requisite value and validity

1.4.2 Tender Fee of requisite amount

1.4.3 Requisite Documents for compliance to Qualification Criteria mentioned in Clause 1.7.

- 1.4.4 Drawing, Type Test details along with a sample of each item as specified at Annexure I (as applicable)
- 1.4.5 Duly signed and stamped 'Schedule of Deviations' as per Annexure III on bidder's letter head.
- 1.4.6 Duly signed and stamped 'Schedule of Commercial Specifications' as per Annexure IV on bidder's letter head.
- 1.4.7 Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder.
- 1.4.8 Copy of PAN, GST, PF and ESI Registration (In case any of these documents is not available with the bidder, same to be explicitly mentioned in the 'Schedule of Deviations')
- 1.4.9 Documents for safety bid evaluation as per Appendix 13: CSM-F-9 Safety Bid Evaluation Criteria

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

1.5. 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 'Annexure III - Schedule of Deviations' and same shall be submitted as a part of the Technical Bid.

1.6. Right of Acceptance/Rejection

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

- i. EMD of requisite value and validity
- ii. Tender fee of requisite value
- iii. Price Bid as per the Price Schedule mentioned in Annexure I (BOQ)
- iv. Necessary documents against compliance to Qualification Requirements mentioned at Clause 1.7 of this Tender Document
- v. Filled in Schedule of Deviations as per Annexure III
- vi. Filled in Schedule of Commercial Specifications as per Annexure IV
- vii. Receipt of Bid within the due date and time

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

1.7 Qualification Requirement / Eligibility Criteria

1. The bidder must have minimum three years' experience of executing electrical nature of jobs for maintenance / commissioning of 66KV/ 33KV/ 11KV/ LT network or Meter Installation / Replacement in any utility.
(Self-Undertaking and suitable supporting documents to be submitted)
2. The bidder must have minimum average annual turnover of Rs. 1 Crore in last three financial years.
(Audited balance sheet and Profit and loss account statement to be submitted).
3. Bidder should have Performance Certificates for satisfactory performance of having rendered similar services from at least one reputed company. The services against these issued certificates should have be carried out in last five years from the date of bid submission.



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In case the bidder has a previous association with TPCODL or other Tata Power group companies for similar services, the performance feedback for that bidder by User Group of TPCODL or other Tata Power group companies shall only be considered irrespective of performance certificates issued by any other organization.

(Performance Certificate to be submitted)

4. The bidder should have Valid Electrical Contractor License to work in Odisha. In case bidder is not having this License, Bidder shall submit an undertaking that in case they are the successful bidder, same shall be obtained by them and shall be submitted to TPCODL within two months from award of contract.
(Copy of valid Electrical Contractor License issued by competent Authority, shall be submitted)
5. The bidder must have all statutory compliance like valid PAN no., ESI registration, EPF registration, GSTN, etc. In case bidder is not having these statutory compliances, the Bidder shall submit an undertaking that in case it is a successful bidder, it shall obtain the same and submit to TPCODL before execution / award of contract.
(Copy of above registrations / supporting documents to be submitted)

1.8. Marketing Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the General Condition of Contracts. Bidders must agree to these rules prior to participating. In addition to other remedies available, TPCODL 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. 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/NIT

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 TPCODL. This includes all bidding information submitted to TPCODL. All tender documents remain the property of TPCODL and all suppliers are required to return these documents to TPCODL upon request. Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

2.0 Evaluation Criteria

- The bids will be evaluated technically on the compliance to tender terms and conditions
- The bids will be evaluated commercially on all-inclusive lowest cost for overall tender BOQ as calculated in Schedule of Items [Annexure I]. TPCODL however, reserves right to split the order line item wise and/or quantity wise amongst more than one Bidder. Hence, all bidders are advised to quote their most competitive rates against each line item.
- Bidder has to mandatorily quote against each item of Schedule of Items [Annexure I]. Failing to do so, TPCODL may reject the bids.

NOTE: In case a new bidder is not registered with TPCODL, factory inspection and evaluation shall be carried out to ascertain bidder's manufacturing capability and quality procedures.



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However TPCODL 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 TPCODL shall be final and binding on the bidder in this regard.

2.1 Price Variation Clause: The prices shall remain FIRM during the entire contract period.

3.0 Submission of Bid Documents

3.1 Bid Submission

Bidders are requested to submit their offer in line with this Tender document. TPCODL shall respond to the clarification raised by various bidders and the replies will be sent to all participating bidders through TPCODL e-tender system (Ariba).

Bids shall be submitted in 3 (three) parts:

FIRST PART: "EMD" as applicable shall be submitted. The EMD shall be valid for 210 days from the due date of bid submission in the form of BG / Bank Draft / Bankers Pay Order (issued from a Scheduled Bank) online NEFT/ RTGS transfer favoring 'TP Central Odisha Distribution Limited' payable at Bhubaneswar. The EMD has to be strictly in the format as mentioned in General Condition of Contract, failing which it shall not be accepted by TPCODL and the bid as submitted shall be liable for rejection. A separate non-refundable tender fee of stipulated amount also needs to be transferred online through NEFT/ RTGS in case the tender document is downloaded from our website.

TPCODL Bank Details for transferring Tender Fee and EMD is as below:

Account Name: TP CENTRAL ODISHA DISTRIBUTION LIMITED

Bank Name: SBI, IDCO Towers, Bhubaneswar

Bank Account No. : 10835304915

IFSC Code: SBIN0007891

For Tender Fee and EMD submitted via online transfer, bidder to ensure that the same are carried out through separate transactions.

The EMD in the form of Bank Draft / BG /Bankers Pay Order shall be delivered at the following address in sealed envelope clearly indicating the tender reference / enquiry number, name of tender and bidder name:

Chief (Procurement & Stores)

TP Central Odisha Distribution Limited

2nd Floor, IDCO Towers, Janpath, Bhubaneswar-751022

SECOND PART: "TECHNICAL BID" shall contain the following documents:

- a) Documentary evidence in support of qualifying criteria
- b) Technical literature/GTP/Type test report etc. (if applicable)
- c) Qualified manpower (if available)
- d) Testing facilities (if applicable)
- e) No Deviation Certificate as per the Annexure III – Schedule of Deviations
- f) Acceptance to Commercial Terms and Conditions viz. Delivery schedule/period, payment terms etc. as per the Annexure IV – Schedule of Commercial Specifications.
- g) Quality Assurance Plan/Inspection Test Plan for supply items (if applicable)
- h) Project Implementation Plan including Level 2 Schedule for the project



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- i) Unpriced mentioning “Quoted/Not Quoted” against all line items (Prices should not be mentioned)

The technical bid shall be properly indexed and is to be submitted through TPCODL E-tender platform (Ariba) only. Hard copy of Technical Bids need not be submitted.

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the TPCODL, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

THIRD PART: “PRICE BID” shall contain only the price details and strictly in format as mentioned in Annexure I along with explicit break up of basic prices, Taxes & duties, Freight etc. In case any discrepancy is observed between the item description stated in Schedule of Items mentioned in the tender and the price bid submitted by the bidder, the item description as mentioned in the tender document (to the extent modified through Corrigendum issued if any) shall prevail. Price Bid is to be submitted in soft copy through TPCODL E-Tendering system (Ariba) only. Hard copy of Price Bid not be submitted.

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 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 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

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

All communication will be done strictly with the bidder who have done the above step to participate in the Tender.

Communication Details:

Package Owner

Name: Imran Ahmad
Designation: HoG-Procurement (Commercial Services)
Contact No.: 9958294855
E-Mail ID: imran.ahmad@tpcentralodisha.com



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Escalation Matrix

Name: Mr. Sudhakar Behera
Designation: Senior General Manager (Procurement)
Contact No.: 9437282663
E-Mail ID: sudhakar.behera@tpcentralodisha.com

Bidders are strictly advised to communicate with Package Owner through TPCODL E-tender System (Ariba) only. They need to pay Tender Participation Fee to receive the Ariba log-in.

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 TPCODL. 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.

Applicable GST to be specified clearly.

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.

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, the TPCODL 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.

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 TPCODL against the risk of bidder's conduct which would warrant forfeiture.

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

- Banker's Cheque/ Demand Draft/ Pay order drawn in favor of TP Central Odisha Distribution Limited payable at Bhubaneswar.



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- Online transfer of requisite amount through NEFT/ RTGS.
- Bank Guarantee valid for 210 days after due date of submission.

The EMD shall be forfeited in case:

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

Or

b) The successful Bidder does not

a) accept the Purchase Order, or

b) furnish the required Performance Security Bank Guarantee

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 the TPCODL's processing of Bids or award decisions may result in rejection of the Bidder's Bid.

4.2. Technical Bid Opening

Bids will be opened at TPCODL Office, Bhubaneswar. All tender bids shall be opened internally by TPCODL. Presence of any bidder will not be allowed during bid opening process. Technical bid must not contain any cost information whatsoever.

First the envelope marked "EMD" will be opened. Bids without EMD/cost of tender (if applicable) 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, one by one.

4.3. Preliminary Examination of Bids/Responsiveness

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

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.

Prior to the detailed evaluation, TPCODL 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 TPCODL and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

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, TPCODL may, at its discretion, ask the Bidder for a clarification on its Bid with respect to the TPCODL specifications and attempt

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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 TPCODL.

4.5. Price Bid Opening

Price bids will be opened internally without the presence of any bidder representative. 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 TPCODL without any further correspondence in this regard.

4.6. Reverse Auctions

TPCODL reserves the right to conduct the reverse auction (instead of public opening of price bids) for the products/ services being asked for in the tender. The terms and conditions for such reverse auction events shall be as per the Acceptance Form attached as Annexure VI of this document. The bidders along with the tender document shall mandatorily submit a duly signed copy of the Acceptance Form attached as Annexure VI as a token of acceptance for the same.

5 Award Decision

TPCODL 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 Annexure I (Schedule of Items) subject to any corrections required in line with Clause 4.3 above. The decision to place purchase order/LOI solely depends on TPCODL on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that TPCODL may deem relevant.

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

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

6 Order of Preference/Contradiction

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

1. Schedule of Items (Annexure I)
2. Post Award Contract Administration (Clause 7.0)
3. Submission of Bid Documents (Clause 3.0)
4. Scope of Work and SLA (Annexure VII)
5. Technical Specifications (Annexure II)
6. Acceptance Form for Participation in Reverse Auction (Annexure VI)
7. General Conditions of Contract (Annexure VIII)

7 Post Award Contract Administration

7.1. Special Conditions of Contract

- After finalization of tender, TPCODL shall place a Rate Contract on successful bidder(s). Rate contract shall be valid for a period of ONE year from the placement of Contract.
- Release Order (RO) shall be placed as per requirement of TPCODL. Rate shall remain FIRM till the validity of Rate Contract.
- All the costs pertaining to ROW is included in the scope of BA. Accordingly the BA needs



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to consider this cost while submitting their Price Bids. However, TPCODL shall reimburse any statutory Fees paid by the BA to any Govt. Agency for such clearance, subject to production of documentary evidence.

- Before commencement of work, BA may be required to conduct the detail survey for allotted work for further submission of the Survey Report to the Engineer-in-Charge for approval. Since such survey is in the scope of BA, the bidder may consider this while offering its Price Bid.
- BA shall deploy resources within 15 days from date of placement of Release Order.
- TPCODL reserves the right to make changes to the scope of work with a view to optimize on the overall cost to TPCODL. BA shall fully cooperate with TPCODL in making such changes with an aim for overall cost optimization. The revised charges for Contract shall be jointly agreed upon between TPCODL and BA in such case.
- Business Associate (BA) shall submit applicable Performance Bank Guarantee as per GCC within 15 days of issuance of order. PBG applicable shall be 5% of Order Value. PBG submitted, shall be released after completion of applicable guarantee period plus one month.
- Any change in statutory taxes, duties and levies during the contract period shall be borne by TPCODL. However, in case of delay in work execution owing to reasons not attributable to TPCODL, any increase in total liability shall be passed on the Bidder, whereas any benefits arising owing to such statutory variation in taxes and duties shall be passed on TPCODL.
- TPCODL reserves the rights to short close the issued Release Order / Rate contract, in case of any quality issues.
- All the terms and conditions of TPCODL General Conditions of Contract for Composite Orders shall be applicable.

7.2 Drawing Submission and Approval

The relevant drawings and GTPs need to be submitted by BA within two weeks of receipt of Rate Contract. In case, re-submission of drawings is required on request of TPCODL, same needs to be submitted back to TPCODL within 5 days of such request.

Wherever TPCODL specifications are not available, relevant IS/IEC to be followed. All Drawings mentioned in the Tender Specification and other required for the completeness of the tender shall be submitted. Drawing submission process shall not be deemed complete of all the requirements are not complied during the submission of the same

7.3 Delivery Timelines

BA shall ensure completion of the electrification works including Supply of Meters and Service Connection kit within 60 days of the issue of Release Order or Manufacturing Clearance, whichever is later.

7.4 Warranty Period

As per technical specifications.

7.5 Payment Terms

At end of each month, BA shall provide reconciliation of protocol in the system. Based on reconciled protocol, the payment shall be released as per below milestone:-



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- a. 90 % payment shall be released within 30 days of bill submission at designated desk.
- b. 10% payment shall be released after safety, quality parameter and material reconciliation verification by EIC or within 60 days from receipt of bill, if no issue is reported by EIC, whichever is earlier.

Note: Safety and Quality parameters includes ensuring sufficient stock of PPEs at BA main store for replenishing faulty tools and PPEs

Payment shall be released within 30 days from the date of submission of certified bills/ invoices with complete details and fulfilment of statutory compliances and other requirements, if any.

7.6 Climate Change

Significant quantities of waste are generated during the execution of project and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted. This would ensure the minimization of environmental and social impact in order to combat the climate change. Please refer attached Environment Policy and Sustainability Policy, Annexure-XI for more details.

7.7 Ethics

TPCODL is an ethical organization and as a policy TPCODL 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.

TPCODL work practices are governed by the Tata Code of Conduct which emphasizes on the following:

- We shall select our suppliers and service providers fairly and transparently.
- We seek to work with suppliers and service providers who can demonstrate that they share similar values. We expect them to adopt ethical standards comparable to our own.
- Our suppliers and service providers shall represent our company only with duly authorized written permission from our company. They are expected to abide by the Code in their interactions with, and on behalf of us, including respecting the confidentiality of information shared with them.
- We shall ensure that any gifts or hospitality received from, or given to, our suppliers or service providers comply with our company's gifts and hospitality policy.
- We respect our obligations on the use of third party intellectual property and data.

Bidder is advised to refer Tata Code of Conduct (TCOC) attached at Annexure X for more information.

Any ethical concerns with respect to this tender can be reported to the following e-mail ID:

- 1) Chief Ethics Counselor – ravindra.singh@tpcentralodisha.com

8 Specification and standards

As per Annexure.

9 General Condition of Contract

Any condition not mentioned above shall be applicable as per GCC attached along with this tender.

10 Safety



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All jobs are this tender have to be executed strictly in compliance to the Safety terms and Conditions of TP Central Odisha Distribution Limited. Please refer attached Safety terms and conditions, Annexure-IX, for details. Violation of Safety norms will result in Penalty as mentioned in the above document.

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ANNEXURE I
SCHEDULE FOR ITEMS

Attached.

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ANNEXURE II
TECHNICAL SPECIFICATIONS

Attached

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ANNEXURE III
SCHEDULE OF DEVIATIONS

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

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

S. No.	Clause No.	Tender Clause Details	Details of deviation with justifications

By signing this document we hereby withdraw all the deviations whatsoever taken anywhere in this bid document and comply to all the terms and conditions, technical specifications, scope of work etc. as mentioned in the standard document except those as mentioned above.

Seal of the Bidder:

Signature:

Name:



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ANNEXURE IV
SCHEDULE OF COMMERCIAL SPECIFICATIONS

(The bidders shall mandatorily fill in this schedule and enclose it with the offer Part I: Technical Bid. In the absence of all these details, the offer may not be acceptable.)

S. No.	Particulars	Remarks
1.	Prices firm or subject to variation (If variable indicate the price variation clause with the ceiling if applicable)	Firm / Variable
1a.	If variable price variation on clause given	Yes / No
1b.	Ceiling	----- %
1c.	Inclusive of GST	Yes / No (If Yes, indicate % rate)
1d.	Inclusive of transit insurance	Yes / No
2.	Delivery	Weeks / months
3.	Guarantee clause acceptable	Yes / No
4.	Terms of payment acceptable	Yes / No
5.	Performance Bank Guarantee acceptable	Yes / No
6.	Liquidated damages clause acceptable	Yes / No
7.	Validity (180 days) (From the date of opening of bid)	Yes / No
8.	Inspection during stage of manufacture	Yes / No
9.	Rebate for increased quantity	Yes / No (If Yes, indicate value)
10.	Change in price for reduced quantity	Yes / No (If Yes, indicate value)
11.	Covered under Small Scale and Ancillary Industrial Undertaking Act 1992	Yes / No (If Yes, indicate, SSI Reg'n No.)

Seal of the Bidder:

Signature:

Name:



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ANNEXURE V

CHECKLIST OF ALL THE DOCUMENTS TO BE SUBMITTED WITH THE BID

Bidder has to mandatorily fill in the checklist mentioned below:-

S. No.	Documents attached	Yes / No / Not Applicable
1	EMD of required value	
2	Tender Fee as mentioned in this tender	
3	Signed copy of this tender as an unconditional acceptance	
5	Duly filled schedule of commercial specifications (Annexure IV)	
6	Sheet of commercial/technical deviation if any (Annexure III)	
7	Balance sheet for the last completed three financial years; mandatorily enclosing Profit & loss account statement	
8	Acknowledgement for Testing facilities if available (duly mentioned on bidder letter head)	
9	List of Machine/tools with updated calibration certificates if applicable	
10	Details of order copy (duly mentioned on bidder letter head)	
11	Order copies as a proof of quantity executed	
12	Details of Type Tests if applicable (duly mentioned on bidder letter head)	
13	All the relevant Type test certificates as per relevant IS/IEC (CPRI/ERDA/other certified agency) if applicable	
14	Project/supply Completion certificates	
15	Performance certificates	
16	Client Testimonial/Performance Certificates	
17	Credit rating/solvency certificate	
18	Undertaking regarding non blacklisting (On company letter head)	
19	List of trained/untrained Manpower	

Seal of the Bidder:

Signature:

Name



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ANNEXURE VI

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed and stamped by the bidder)

In a bid to make our entire procurement process more fair and transparent, TPCODL intends to use the reverse auctions as an integral part of the entire tendering process. All the bidders who are found as technically qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

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

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

Signature & Seal of the Bidder



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ANNEXURE VII

SCOPE OF WORK AND SERVICE LEVEL AGREEMENT

The Scope of work shall include:

- a) Supply of Meters and New Service Connection Kit
- b) Installation of energy meter, Service line from nearby LT pole/ Distribution Board/ Distribution Transformer, meter box, double pole miniature circuit breaker, meter board earthing point, internal wiring works, etc. as per service connection kit.
- c) Testing of consumer meter at TPCODL laboratory
- d) BA has to maintain space for stacking transit material at suitable locations in Division / Sub-division in urban and Sub-division / Section in Rural area to ensure timely execution of the cases.
- e) Rectification of site as per instruction of Site-in –incharge or as per TPCODL representative or as identified in quality findings.
- f) It is the responsibility of the BA to maintain the store properly. TPCODL may audit this facility on monthly basis or as and when required
- g) Cases to be executed for meter installation will be shared through Soft copy / Excel list / Notifications in SAP.
- h) BA to fill the pre-printed SAP protocols and handover consumer copy to consumer and return TPCODL copy to EIC. BA to keep record of protocols with him in hard and soft in traceable manner. Soft copy of Protocol / PV sheet need to be uploaded in SAP as well as per mode advised by TPCODL
- i) BA will provide monthly MIS of executed work & the improvement plan of the deficiency in activity and discuss the same with Engineer In-charge
- j) BA shall ensure that only qualified personnel are working at site under proper supervision.
- k) Capturing clear photographs of all meters installation cases and return (not executed) cases due to constrains at site. The photographs shall be submitted to Metering Team in form of digital media / Pen drive, bi-weekly on sorted CA / Notification-wise. Generally 5-6 photos have to be brought as:
 - a. New Installed Meter, b. Connection point at pole end, c. Sag provided, d. Service Cable at consumer end & e. Pole No, f. Photograph of old removed meter, g Photograph of old removed meter reading. Same is to be converted in to a single PDF and uploaded in SAP. This will be considered as a part of meter installation activity. Mobile app may be used for this activity.
- l) The agency will get the job advices for next working day, on previous evening through Service Order. The vehicle may be loaded with meters and accessories on previous evening itself and must be parked at designated location. These vehicles can be audited by TPCODL staff at any time with or without prior intimation to BAs



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- m) BA to co-ordinate with lab in-charge and ensure that sufficient no of tested meters are received from lab for next 3 days of execution.
- n) The Agency shall ensure daily submission of filled protocol sheets of all type of activities, for all the jobs completed during the day, at MMG Sub-Division / Division office / Data Centre for Circle or other suggested TPCODL location on same day of execution.
- o) Bidder to arrange sufficient manpower for punching of protocols in system on next day of execution of work. Movement of protocols to data centre (where Protocol Punching operators will be sitting) and after punching to record room (where all protocol will be kept for record) will be in scope of BA.
- p) Agency should maintain proper records of duplicate copies of protocols in hard and soft in easily retrievable formats at his location. Agency shall submit the same on any such requirement of protocols / data as per requirement from TPCODL
- q) EIC reserves the right to amend the schedule for submission of protocols. All such data maintained cannot be shared with third party without prior information to Engineer In-charge.
- r) Agency shall provide Daily Meter Installation Report in format provided by TPCODL to capture site visit details and submit the same to MMG on the same evening. TPCODL may change the format of control sheet as per requirement of EIC on time to time basis.
- s) BA shall be responsible for reconciliation of material and generating all reports & formats including exception reports on daily basis.
- t) All new connection cases shall be completed in 24 hours from the date of issuance of case.
- u) Utilisation report of all the materials will be submitted along with bills of subsequent month in prescribed format along with check list.
- v) TPCODL will provide accucheck (Standard Meter for testing of accuracy of meters) for testing.
- w) BA team will report to Meter Testing lab In-charge / Single Phase division In-charge as decided by EIC.
- x) Maintenance of Accucheck will be in scope of BA, however annual calibration of same will be done by TPCODL (Cost of BOM should include on manpower cost).
- y) Accuracy results along with required information should be captured in protocol.

Certificate of Quality:

BA shall submit a self-certification for quality of installation with every bill submitted to TPCODL to confirm that installations have been in accordance with procedures / standards laid down in this document and other quality norms of TPCODL. If any deviation in Quality is observed, agency will rectify within 10 days of notice given by TPCODL.

Statutory Requirements:

The BA is required to complete the following minimum statutory compliances and submit the documentary evidence for the same.

- a) Provident Fund code
- b) Obtains ESI no. of all employees.



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- a. Gets its workers insured so that he is in a position to make the payment under Workmen Compensation Act in case of any eventuality. Please refer GCC guidelines for the same having mention of insurance requirement.
- b. Submits information to Principle Employer on the Standard Format
- c) Obtains Form V from the Principle Employer
- d) Obtains labor license from the Labor Dept.
- e) Complies with the CL (R&A) Act.
- f) Possesses a valid Service tax registration certificate.
- g) Workmen Compensation, PA Insurance of worker / supervisor deployed in the job ; Copies to be submitted to TPCODL
- h) Any other document required as per statutory requirement / applicable time to time.

PPE, Tools & Tackles:

The agency shall provide the tools and tackles to each team as per specifications / PPE matrix or through any other notification as shared by TPCODL. Brief list is provided below:

Regular Tools:

Tools	Make	Specification
a. CMRI for all 3 Phase teams	Sands / Analogic	Suitable for Data download of meters commonly installed in TPCODL
b. Crimping tools	Dowll, Jainson or Equivalent	4sq mm to 300 sq mm
c. Clamp Meter of	Rishab or equivalent	0-20A-200A
d. Multimeter for testing voltage	Rishab or equivalent	0-650 Volts
e. Drill Machine with extension and ELBC. Battery operated Drill will be preferred.	Bosch, Black and Decker	Suitable for fixing meters of Single Phase and Three Phase.
f. Extension cord with ELCB for Drill Machine.	GE, Ligrand , L&T or equivalent	Rating : 30 mA
g. Hammer	Taparia / Pye	0.5 KG
h. Phase tester	Taparia / Pye	LT Line
i. Lineman's Insulated pliers	Taparia / Pye	8 Inch
j. Wire stripping pliers	Taparia / Pye	
k. Cut resistant gloves for team cutting cables.	Ugygi	

Tools	Make	Specification
l. Saddles	Any Make	For Holding cable
m. Screw Driver of different heads	Taparia / Pye	One sided fixed only.
n. Box Spanner set	Taparia / Pye	Suitable for fixing lugs up to 300 sq mm
o. Tool box / Tool Bag	Taparia / Pye	Suitable for keeping required equipment
p. Double test lamp with Pigni Lamp	Self Developed	2 Pigni Lamp in series
q. Pre-define Insulated torque Spanner Set	Taparia / Pye	Suitable up to 300 sq mm lugs
r. Measuring Tape	Any Make	30 M
s. Phase Separator	NA	Bakelite sheet
t. Safety Pouch for keeping tools while working	Any Make	Canvas bag with Belt holding at waist.
u. Safety cones with Caution tapes	Any make	LDPE material 750 MM
v. Torch / Emergency light	Eveready or equivalent	LED Torch
w. First Aid Box	Metalic Box	As per table below
x. Rope	8 mm or more	Nylon Rope various size suitable for passing tools to lineman working at height, for pulling cable to top of pole.
y. Copper/ Brass chains & shorting leads	Any Make	Suitable length to short 11 KV line
z. Fire extinguisher	Any Make	ABC Dry Powder type 2KG
aa. Ladder (foldable type(2/3 Layer)or as advised by TPCODL) for suitable height.	Sintex or equivalent	FRP with holding 'U' clamp on top rug, collapsible 9 M
bb. Neon Tester for HT Teams.	Technology Products	Suitable for up to 33KV
cc. Discharge Rod 6 Nos with each Three Phase Team.	Taurus Power	
dd. Water Level Gauge.	Any Make	For holding meter straight w r.t. ground reference

Material in First Aid Box

S. No.	Name of Medicine/ Items	Quantity at the time refilling FAB	Usage
1	Bandage 5CM x 3M	6	For dressing of wounds
2	Hansa Plast Wash Proof or Equivalent	16	For dressing of minor wounds / scratches/ injury
3	Cotton 30 GM	2 Rolls	For cleaning / dressing of wounds
4	ORS Power 21GM	2	For dehydration
5	Savlon 50ML	1	Antiseptic solution for cleaning of wounds
6	Cipladine Ointment 15 GM	1	For cut/ burnt wounds
7	Omni Gel Cream 30GM	1	For sprain/ swelling / pain, etc
8	Sterilized Cotton Pad 10CM x 10CM	2	For dressing
9	Scissor 110MM	1	For dressing
10	Forceps 4 inches	1	For dressing
11	Safety Pins	1 Pack (10 pieces)	For misc. use
12	Splint	5 pieces	For support of fractured part
13	Tablet Crocin	30	For fever / headache / body pain
14	Tablet Digene	30	For gas / acidity / pain/ abdomen problem

PPEs

- Double rope Full body safety Harness with latch system & thigh protection (EN 361:2002/ EN 358 : 2000/IS: 3521:1991/2002)
- Safety helmet (IS:2925-1984) with visor (EN: 166 CE marked)
- Safety shoes (IS:15298), insulated gloves(EN: 60903 CE marked),
- Rubber mat (for shock resistant upto 11KV).
- Electrical Safety Gloves.
- Face Visor (big enough to cover up to neck)
- Reflector Jacket
- Hand Cotton Gloves.

Any other PPE as suggested by Engineer In-charge.



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Note : Any other Standard tool which BA considers to be used should also be included. Bidder to ensure to keep minimum of 5 % reserve of all tools and tackles to meet the daily requirement without hampering the work. Stock register to be maintained by BA and shall submit a copy of same to TPCODL for verification along with monthly bill being invoice submitted.

New Connection Service Kit

S. No.	Description of Materials	Unit	Quantity per connection
1	Single Phase Static Meter, Class 1.0, smart meter compatible with states existing metering system, 10-60A, 240 Volts with FRP based sheet moulding compound (SMC) 2.5 mm thick confirming to IS:13410 (1992)	Nos	1
2	Meter Seal (To be supplied by TPCODL)	Nos.	4
3	Twin Core (unarmoured) PVC Insulated Cable of size 4.0 sq. mm with Aluminium Conductor as per REC Specification 26/1983 with average length of 27 meter per connection	Mtr	27
4	GI Pipe of 25 mm dia medium class confirming to IS:1161 with two nos. supporting clamps of size 40X3 MS Flat as per REC Construction Standard H-1	No.	1
5	ISI mark, 240 V, 16A Double Pole Miniature Circuit Breaker	Nos.	1
6	1.5 sq. mm PVC Copper Multi Standard PVC Insulated Wire as per BIS Specification	Mtr.	5
7	Single point wiring Wooden / Fiber Glass Reinforced Polyester sheet mounted compound (SMC) Board { 200 X 150 X 40 mm (minimum)} for installing internal electrification.	Nos.	1
8	Piano Type 5A, 240 V ISI Mark Switch	Nos.	2
9	5A, 240 V ISI Mark Three Pin Socket	Nos.	1
10	Backelite round based / wooden round base to house lamp holder	Nos.	1
11	ISI Mark 5A, 240 V Angle Backelite / Plastic Holder Lamp Holder	Nos.	1
12	LED Lamp of 9 Watts, 144-288 Volts operating voltage	Nos.	1
13	Coil Earthing (No. 6 GI Wire of 40 mm dia. Coil)	Nos.	1
14	GI wire of 3.15 mm (10 SWG) dia (55-95 Kg. Quality) as per IS 280 between LT Pole & Meter Box / Switch Board	Kg.	2
15	Nail	Nos.	10
16	Clips for supporting PVC internal wiring at every 12 inch distance	Nos.	6
17	Installation Charges of Meter and Kit	EA	1

Division Wise Summary of Unelectrified Households

S No	Division	No Infra Works Required	Only LT Works	DT+LT Works	DT+LT+HT Works	Total
1	BCDD-II	89	-		80	169
2	BED, BBSR	35	24		21	80
3	Nimpara	634	123		-	757
4	Khurda	744	1,466	13	534	2,757
5	Puri	2,325	1,110	-	10	3,445
6	Nayagarh	2,799	996	105	761	4,661
7	Balugaon	456	168	54	87	765
8	CDD-II	62	21	-	4	87
9	CED – Cuttack	1,540	427	11	27	2,005
10	Athagarh	1,184	964	37	3,106	5,291
11	Salipur	362	300	-	3	665
12	Dhenkanal	1,666	2,732	230	761	5,389
13	Talcher	1,315	1,346	845	2,541	6,047
14	Angul	1,822	2,520	-	3,579	7,921
15	Kendrapara-I	1,540	672	264	4,355	6,831
16	Kendrapara-II	265	241	-	243	749
17	Jagatsinghpur	513	308	-	30	851
18	Paradeep	-	367	-	511	878
Total		17,351	13,785	1,559	16,653	49,348

Supply to unelectrified households which require network augmentation through either DT, LT or HT Works shall be provided only after completion of necessary network augmentation works.



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ANNEXURE VIIa

PREFERENTIAL NORMS FOR PROCUREMENT FROM MSMEs REGISTERED IN THE STATE OF ODISHA

1. Tender Fees

To participate in the tender, MSMEs registered in the State of Odisha shall pay Rs.1,000/- including GST towards cost of tender paper.

2. Earnest Money Deposit (EMD)

EMD shall be exempted for MSME registered in the State of Odisha. However, Bidder shall be barred to participate in the tendering process for a period of 2 years in case it backs out post award of the contract.

3. Qualification Requirement for Open Tenders

Qualification Requirement of Financial Turnover for MSME registered in the State of Odisha shall be reduced to 20% of the existing criteria.

For past experience, instead of relying on the volumes / value of earlier Supplies / Projects, assessment of the Bidder shall be done on the basis of feedback from Customers. Past performance experience at Tata Power and its Group Companies shall supersede feedback from other Customers.

4. Reservation for MSME

It shall be mandatory to procure at least 20% of the total volume of the procurement from MSME registered in the State of Odisha (however, it shall not apply where goods/services are not available with the MSME), subject to matching L1 discovered prices and meeting technical specifications including quality requirements.

5. Performance Bank Guarantees

Performance Bank Guarantee for MSME registered in the State of Odisha shall be 25% of the value normally prescribed.



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ANNEXURE VIII
GENERAL CONDITIONS OF CONTRACT

Attached: General Conditions of Contract for Composite Orders

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ANNEXURE IX

SAFETY POLICY AND SAFETY TERMS AND CONDITIONS

1. Objective

The Tata Power engages contractor workforce to execute, run and maintain various operating sites and facilities across locations for various business verticals including Generation, Transmission, Distribution and Renewable. The activities range from project execution, operation, maintenance to facilities management.

The management of contractor safety represents a significant challenge for management. Tata Power has a responsibility to ensure that contractors are provided with enough information and support to enable them to conduct their roles safely and without endangering health and safety of their own workforce or that of our staff.

To ensure reduction in reportable injuries and achieve goal of zero accidents, first edition of contractor safety code of conduct was launched successfully in the year 2014. Since last four years after the launch of CSCC, Tata Power could achieve the objective of reduction in reportable injuries and fatalities.

Over the period, as the system was being matured, a need was felt to make second revision of the CSCC process. Objective of second revision is improve existing CSCC system and make it user friendly.

2. **Scope:** This procedure applies to all operating and project sites of The Tata Power Company Ltd and Group companies including new businesses like EV charging, Home Automation etc.

3. Definitions

- 3.1. **Order Manager:** Order Manager is the Tata Power representative, who has the ownership of the given job.
- 3.2. **Site Safety Management Plan:** It is the safety plan agreed between Contractor and Tata Power. It will contain the entire job specific safety requirement and will be signed by the contractor.
- 3.3. **Contractor:** An individual or a company that provides services to Tata Power under a signed contract.
- 3.4. **Emergency:** a serious, unexpected or dangerous situation requiring immediate action, which may result in loss of revenue/property, business discontinuity. In case of Emergency*, services may be procured by selecting the qualified vendor based on the vendor category without the safety bid evaluation. It must be approved by MB level and above.
- 3.5. **Expert Service jobs:** Jobs which needs expert services of contractor which does not involve direct exposure to the potential risk or work which involves only supervisory work such as expert for turbine overhaul, expert for boiler overhaul, expert for pump and motor, expert for compressor overhaul.

- 3.6. Head of the Division:** Business in charge of the division who is overall custodian of the generating station or transmission division or distribution division.
- 3.7. Category A Vendor:** Vendor eligible to carry out Very High & High risk (as per Tata Power Hazard Identification and Risk Analysis Procedure) and /or Long-Term Contract related to operation and maintenance (O&M) of plant. Vendors must fulfil the requirement specified for Category A in Appendix 12-CSMF-5 of this document.
- 3.8. Category B Vendor:** Vendors eligible to carry out technical jobs, that are classified under Medium /low risk. Vendors must fulfil the requirement specified for Category B in Appendix 12-CSMF-5 of this document.
- 3.9. Category C Vendor:** Vendors eligible for to carry out low or very low risk administrative and office jobs. For this he must fulfil the requirement specified for Category C in Appendix 12-CSMF-5 of this document.
- 3.10. Category D Vendor:** All Consultants, Medical Practitioners or vendors taking job from Tata Power and working from their own premises (e.g. motor rewinding at vendor's shop floor, equipment sent for repair to vendor's works etc.) are classified as Category D Vendor
- 3.11. High Risk Jobs:** A Job or its activities are considered as Very High or High Risk when Order manager apply the "Tata Power Hazard Identification and Risk Analysis" procedure and found safety risk associated with are under Very High or High category. Indicative lists of jobs are given in appendix 15 of this document.
- 3.12. Medium Risk Jobs:** Jobs or its activities are considered as medium risk when Order manager apply "Tata Power Hazard Identification and Risk Analysis" procedure and found the same as Medium Risk.
- 3.13. Low Risk Jobs:** Any job or its activities are considered as Low or Very low risk while Order manager, calculate it by applying "Tata Power Hazard Identification and Risk Analysis" procedure and found it under Low or Very Low category.
- 3.14. Long Duration Jobs:** When the duration of job is 12 months or more, it is considered as Long duration job
- 3.15. High Value Jobs:** When the value of the job contract is Rs. One Crore or more it will be considered as High value job.

4. Responsibilities

4.1 Order Manager: Order Manager is the Tata Power representative, who is responsible for:

- 4.1.1 Finalizing the Site Safety Management Plan along with Contractor, Safety Concurrences Group, Divisional Safety Head and Expert (External or Internal) if required.
- 4.1.2 Supervise and ensure work is carried out as per the Site Safety Management Plan including agreed Risk Assessment (HIRA/JSA) and Method Statement.
- 4.1.3 Conduct audit and evaluate Safety Performance of contractor.
- 4.1.4 Ensure contractors adhere to all statutory provisions.
- 4.1.5 In case any deviation is needed in agreed safety management plan or in CSCC process for execution of job, Management of Change procedure will be applicable, and approval may be obtained from divisional head /Cluster head.

4.2 Contractor: The person, entity or organisation who is executing the job for Tata Power under a contractual agreement and will be responsible for the following

- 4.2.1 To follow all Tata Power Critical Safety Procedure, Rules and guidelines given in Safety Terms and Conditions
- 4.2.2 Undertake job as per Site Safety Management Plan CSM-F10 and method statements agreed with Tata Power.
- 4.2.3 Raise any concerns with regard to their work and its safety with the Tata Power Order Manager.
- 4.2.4 Report all injuries, near misses, unsafe acts/conditions, and occurrences to the Tata Power Order Manager immediately.
- 4.2.5 Ensure that all sub-contractors follow the Tata Power Safety Procedure and agreed Site Safety Management Plan CSM-F10.
- 4.2.6 To follow all statutory requirements as per the laws of the land.
- 4.2.7 All vendors applying for A category jobs or submitting quote for high risk jobs shall obtain certificates of ISO 9001, ISO14001 and ISO45001 before submitting quote for high risk Jobs.

4.3 Safety Concurrence Group: It is Cross Functional Team constituted by Corporate Safety Team, which will have representatives from Execution department, Divisional safety and Corporate / Divisional contracts. SCG will be responsible for the following

- 4.3.1 Assessment of Safety Potential of new vendor before registration as per CSM-F1-Safety Category Qualification Form.
- 4.3.2 Safety Evaluation of the bids as per evaluation format CSM-F-9 Safety Bid Evaluation Criteria
- 4.3.3 Finalization of the Site Safety Management Plan CSM-F-10 submitted by the contractor.
- 4.3.4 Corporate Safety Team / Cluster Safety Head will be part of SCG during Safety Bid Evaluation for following types of jobs
 - 4.3.4.1 High-Risk jobs to be carried out in Annual Overhaul / Major Shutdowns and Outages.
 - 4.3.4.2 Capex jobs of High-Risk Category



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5.1 Vendor Registration

For Vendor Registration, Corporate Contract will issue following documents for evaluation of contractor's safety capability

- 1) [CSM-F1 –Safety Category Qualification Form](#)
- 2) [Safety Terms and Conditions](#)

The document [Safety Terms and Conditions](#) provides the information about Tata Power safety System to the contractor. Contractor will submit the [CSM-F1- Safety Category Qualification Form](#) with all relevant details and documents to Vendor Registration Initiator, which will in turn forward it to Safety Concurrence Group (SCG) for evaluation. The SCG will evaluate the details submitted by the contractor based on a predetermined criteria [CSM-F-5 Safety Potential Evaluation Criteria](#) for Vendor Registration and will determine the category (Category A/B/C/D) for which the contractor will be registered. As mentioned in the above criteria, a site visit may also be organized by SCG prior to registration under Category A and B. In case, the contractor does not qualify the safety criteria, the contractor will not be registered. However, he may apply afresh for registration after 6 months. Please refer [Appendix 1: Process Flow Chart for Vendor Registration](#).

5.2 Bid evaluation

At the time of placing the Purchase Requisition (PR), Order Manager is required to declare the risk involved in the of the job (i.e. High Risk / Medium Risk / Low Risk jobs, based on the RPN in HIRA. If the Job is “High Risk” or “Long Duration”, then RFQ will be attached with following documents:

- 1) [CSM-F7- Blank Safety Competency Form](#)
- 2) [CSM-F8 PPE requirements](#)
- 3) [Safety Terms and Conditions](#)
- 4) [Job Specific Safety Requirement \(Educational and Professional Qualification, Skill & Experience Manpower, Tools and Tackles \(e.g. man lifter, use of drone, use & availability of rescue kit\), Work Methodology etc.\)](#)

Otherwise the RFQ will be attached only with [Safety Terms and Conditions](#). Long term and low value jobs (see definition) are exempted from the CSCC process.

Corporate Contracts will collect duly filled [CSM-F7 Safety Competency Form](#) along with the bid. All other stakeholders will also put their efforts to get all relevant safety data during meeting / discussions with the vendor. SCG will evaluate the document as per the [CSM-F9 Safety bid evaluation criteria](#). If any specific condition related to Contract is required to convey to contractor, Site safety team will attach the same as Annexure for specific conditions of job and submit it to contract team along with safety bid evaluation form. Commercial bid of contractor will be considered for evaluation by contract team only if contractor is qualified in safety bid. Site Safety Management Plan, defining the complete procedure of executing the job at site will be signed by the contractor and SCG after mutual agreement. CC will attach a copy of site safety Management Plan and any specific condition of contract along with PO to the successful bidder. Please refer [Appendix 6: Process Flow Chart for issuing RFQ and PO significant health and safety risk associated with it](#).



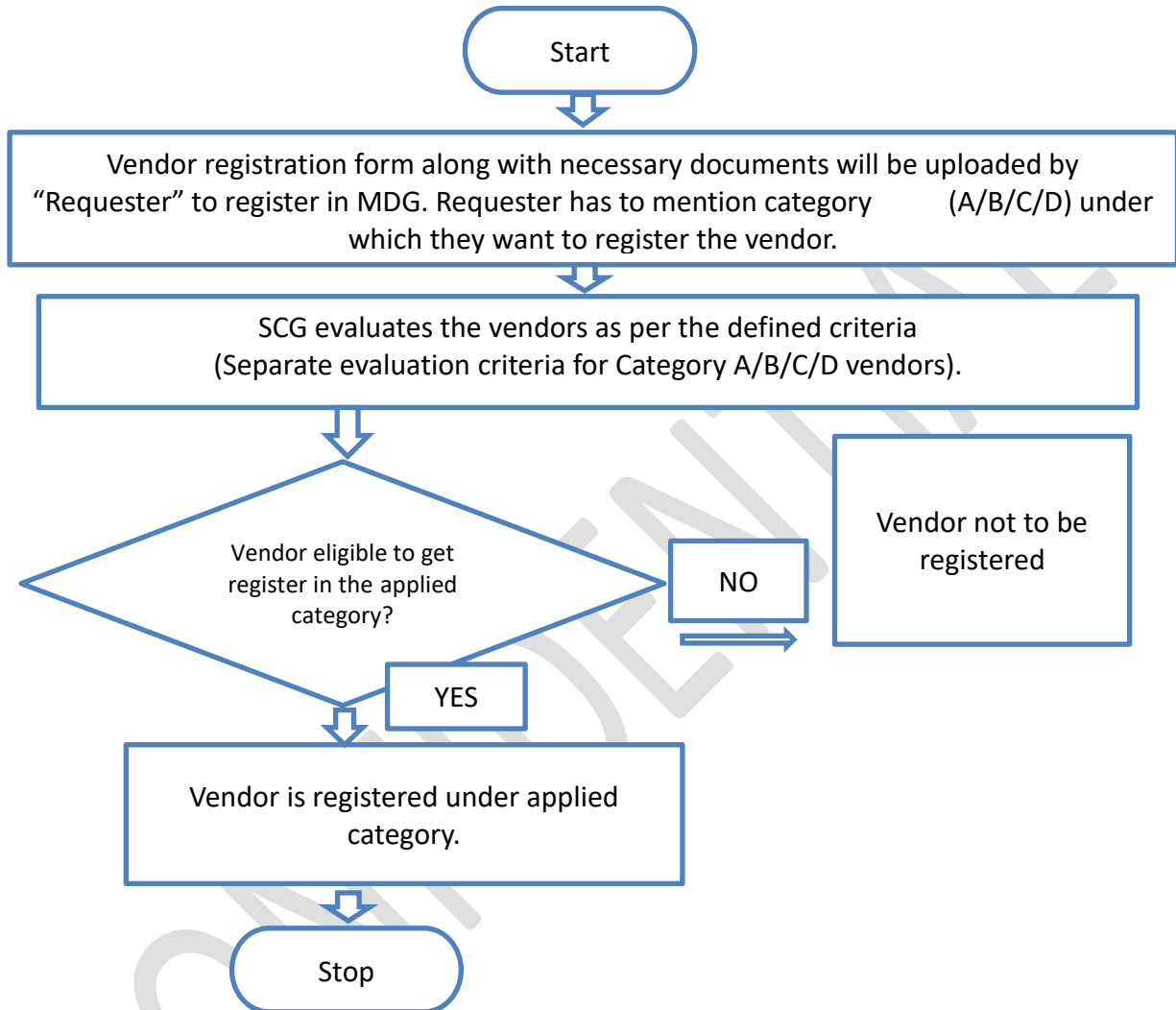
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5.3 Safety Performance Evaluation

During the time of job execution, regular site inspection will be carried out by the Tata Power officials and violations will be dealt as per [CSM-F4 Safety Violation Penalty Criteria](#). Apart from this, monthly safety performance of the contractor will be evaluated based on the predetermined criteria as per [CSM-F11 safety Performance Score](#) and monthly score will be maintained by the Order Manager. Certain percentage of each running bill will be retained as Safety Retention amount and will be released on the basis of Safety Performance Score at certain intervals as defined in [CSM- F-3- Safety Performance Evaluation Criteria](#). Please refer [Appendix 10: Process Flow Chart for Safety Performance Evaluation](#). Percentage of retention amount is mentioned in safety terms and conditions.

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Appendix 1: Process Flow Chart for Vendor Registration





Appendix 2: CSM-F-1 Safety Category Qualification form

1. "Safety Category Qualification Form" is part of vendor registration form. It needs to be filled by the contractor at the time of Registration and should be submitted to Requester / order manager with all relevant documents.
2. The same will be evaluated by Safety Concurrence Group of the Division (SCG) as per the criteria given in CSM-F-5.
3. Information provided by contractor will be verified during site visit.

Safety Category Qualification Form

Please consider my application for

Category A Vendor: Vendor eligible to carry out Very High- and High-risk O&M jobs

Category B Vendor: Vendors eligible to carry out technical jobs, classified as Medium / low risk

Category C Vendor: Vendors eligible for to carry out low or very low risk administrative and office jobs

Category D vendor: All Consultants, Medical Practitioners or vendors taking job from Tata Power and working from their own premises.

Name of the Vendor:						
Sr. No	Safety Information	Remarks	Attachment			
1	Certified for i. OHSAS 18001/ ISO 45001, ii. ISO: 14001 iii. ISO: 9001 (ISO certificates to be issued from reputed accreditation agencies specified by Tata Power)	i. Y/ N ii. Y/ N iii. Y/ N	Attach copy of the certification			
2	Safety Statistics for Last Three (3) Years - LTIFR - LTISR	Yes/No		Year 1 (Last FY)	Year 2	Year 3
			LTIFR			
			LTISR			
3	Do you have Safety Policy?	Yes/No	Attach copy of the safety policy.			
4	Do you have Safety training process?	Yes/No	Attach safety training process.			
5	Do you have Safety organization structure e.g. Safety Officers and Safety Committees?	Yes/No	Attach copy of the safety organization structure.			
6	Name and address of sites where work is in progress or worked earlier	Yes/No	Site details to be attached for inspection by Officials.			

Signature :

Name and Designation :

Stamp of Organization :

Appendix 3: Safety Terms and Conditions

Please refer the attached document [Safety Terms and Conditions](#).

Appendix 4: CSM- F-3- Safety Performance Evaluation Criteria

1. A certain percentage of the bill value will be retained against every running bill as safety performance retention. The amount will be released with the last invoice or every six-month based on Safety Performance Score of contractors. The retention amount will be calculated based on contract value as below.

Contract Value	Retention Amount (%)
Up to 10 Lakhs	2.5
10 – 50 lakhs	2
0.5 to 10 Cr	1.5
>10 Cr	1

2. The evaluation criteria include Lead Indicators such as CFSA (Contractor Field safety Audit) score, percentage of workers trained in TPSDI, inspection of critical equipment. Lag indicators such as Fatalities, LWDC and man days lost.
3. The retention amount saved will go to a separate Safety Improvement Fund.
4. For the contract value of more than Rs 1 Cr or contract duration more than 12 months, the retention amount shall be released half yearly based on safety performance. For all remaining contracts, the retention amount will be released with the final bill.
5. Long term jobs with low value (Less than Rs. 1 Cr.) are exempted from the safety retention. Invoice of these type of jobs can be cleared without safety retention.
6. In case of job stoppage due to safety violations / unsafe observations at the site, no time extension shall be given to the contractor, if such delays are attributable to contractor.
7. In case of fatality, limb loss or loss of property, vendor must pay for liability, legal, statutory and additional mutually agreed settlement charges imposed by the appointed committee. This charge is over and above the retention amount.
8. The committee will finalize an amount between 5 -50 lakhs based on factors such as advise by statutory authorities, contract value and impact of accident etc.
9. Safety performance bonus 1% (limiting to 50 lakhs) of the invoice value will be considered at the end of the job if the contractual safety performance score 100%.
10. During the progress of the work, concerned Supervisor/Engineer will visit and inspect the work site regularly and evaluate the safety performance of the contractor based on matrix attached herewith and apply the Consequence management policy as applicable.
11. Order Manager, divisional chief and SBU head have the authority to terminate the contract in case of three consecutive serious violations.

Safety Performance Evaluation report- CSM-F-3

	<u>Lead Indicators</u>	Unit Of measurement	Target	weight age
1	% of Employee certified in TPSDI/Authorized agency	%	50%	10
2	CFSA score (Annexure 6.1)	Average Severity of Violations	1.49	20
3	Monthly inspection completed by contractor for Critical Equipment, lifting Tools & Tackles and hand tools used at site as per Tata Power Checklist	%	80	5
4	Revalidation of Condition of tools, tackles and equipment by Order Manger.	%	100	15
	<u>Lag Indicators</u>			
1	Number of Fatalities	No.	0	30
2	Number of Lost workday case (LWDC)	No.	0	10
3	Man-days Lost	No.	0	10

Appendix 5: CSM- F-4 Safety Violation Penalty Criteria

Penalty shall be imposed on the contractors under the following circumstances for breaching the contractual agreements:

S No	Description of violation	Severit	Penalty
1.	Working without Permit	5	5000/-
2.	Untrained (TPSDI) worker on high-risk jobs.	5	5000/-
3.	Unhygienic/Bad condition of PPE	2	250/-
4.	Not following Tata Power Procedure & Standard	4	2000/-
5.	Unsafe Act/Condition of Severity 4	4	2000/-
6.	Unsafe Act/Condition of Severity 5	5	5000/-
7.	No Earthling of Electrical equipment	5	5000/-
8.	Damaged welding cable	5	5000/
9.	Violation of Positive Isolation Procedure (LOTO Not followed)	5	5000/
10.	ELCB of more than 30 mA/ELCB not working	5	5000/
11.	On/Off switch of welding m/c not working	5	5000/
12.	Electric cable tied with metal wire	5	5000/
13.	Leakage found DA hose / cylinder	5	5000/
14.	Use of LPG	5	5000/
15.	Use of IC engine based Three-wheeler at the work site.	5	5000/
16.	Starting the job without Toolbox Talk	5	5000/
17.	Spatter falling on DA hose / Gas-line/ pathways / Equipment	5	5000/
18.	No safety latch in crane hook	5	5000/
19.	Load raised or swung over people or occupied areas of buildings	5	5000/
20.	Persons standing in swing area of construction equipment.	5	5000/
21.	Using damaged slings.	5	5000/
22.	Unstable scaffolding/nonstandard Scaffolding in use	5	5000/
23.	Handrails and mid-rails are missing	5	5000/
24.	Safety Harness not anchored with lifeline/fixed structure	5	5000/
25.	Fall arrestor not provided/ Not being used.	5	5000/
26.	Double lifeline not used for working at height	5	5000/
27.	No rubber mat in Electrical Distribution (DB) room	4	2000/-
28.	Water found accumulated in Electrical Distribution room/near welding machine.	4	2000/
29.	Inserting electric cables into socket, without using plug.	4	2000/
30.	Use of damaged electrical cable/two core cables.	4	2000/
31.	Inflammable material found in Distribution Room / welding areas.	4	2000/
32.	Loose material falling into excavated pit	4	2000/
33.	Water logging into excavated pit /trenches	4	2000/
34.	No / inadequate Barricade	4	2000/
35.	Undercut / cave-in found on sides of excavated pits	4	2000/

36.	Grinding wheel/ Coupling/ Piling winch/other rotating parts without guard	4	2000/
37.	The HMV/Mobile Crane operator does not have a valid HMV driving license.	4	2000/
38.	The loading area is not leveled properly.	4	2000/
39.	Ladder not anchored at top	4	2000/
40.	Opening found in working platform of scaffolding/floor	4	2000/
41.	Inadequate illumination at the working area	4	2000/
42.	Loose material lying on Gantry, platform	4	2000/
43.	Cleaning with Compressed Air.	3	500/-
44.	Gas Cylinders using without cap.	3	500/
45.	Gas Cylinders stored without securing	3	500/
46.	Bringing inside any other chemicals, apart from approved by Safety dept.	3	500/
47.	Using drum for sitting or accessing height.	3	500/
48.	Misusing emergency facilities like fire hydrant line/ hose box/ spray system/ eye wash etc.	3	500/
49.	No provision of Safety net where falling materials or tools may occurs	3	500/
50.	Taking electrical supply from non-designated outlet (other than socket).	3	500/
51.	Restricted gangways due to unwanted materials.	3	500/
52.	Not reporting incident.	3	500/
53.	Entering into restricted area like switch yard/ hazardous storage	3	500/
54.	Work without supervision	3	500/
55.	Parking of vehicle without applying wheel choke at right front-front and left rear-rear wheels other than passenger cars.	3	500/
56.	Heavy Vehicle without helper or co-driver.	3	500/
57.	Not wearing florescent safety jacket at site.	3	500/
58.	People travelling in load body of vehicle.	3	500/
59.	Parking of vehicles at non designated area.	3	500/
60.	Shifting heavy materials without guide ropes.	3	500/
61.	Using other than 24V lamp inside the confined space/Use of other than 24V lamps.	3	500/
62.	Angular loading/ lifting with Crane or hoist.	3	500/
63.	By passing the limit switch/ Safety Interlock.	3	500/
64.	Housekeeping activities on road without proper barricade.	3	500/
65.	Trying to board or alit from running vehicle.	3	500/
66.	Cylinder Valves of Gas cylinders not closed when not in use.	3	500/
67.	Flash-back arrester not used.	3	500/
68.	Hand Trolley wheel found damaged.	3	500/

69.	Guy ropes of required length on both sides of object are not used during movement with load.	3	5/ 00/
70.	Scotch block/wedge not provided, when the vehicle is parked.	3	500/
71.	Suitable Trolley not provided to hold the cylinders.	3	500/
72.	Locked First Aid box	3	500/
73.	Caution boards, danger signs (luminescent /red) along with emergency contact number are not found displayed.	3	500/
74.	Person found jumping barricading tape	3	500/
75.	Stacking of pipes, pile casing, drums without chock blocks/wedges	3	500/
76.	The terrain on which Heavy Equipment/Machinery moves is not reasonably hard.	3	500/
77.	Without Safety Helmet at working sites	4	250/-
78.	Without Crash Helmet (on bikes)	4	500/-
79.	Without Full body double lanyard Safety Harness (for work at height)	5	5000/-
80.	Without Hand gloves - Material Handling, Welding, Cutting,	4	100/-
81.	Without Safety goggles/ face shield - Welding/Cutting /Grinding	5	5000/-
82.	Handling Chemical without PVC Apron	5	5000/-
83.	Smoking in prohibited area (Closed Go-downs, Storage of flammable material, Storage of Gas cylinders)	5	1000/-
84.	Sleeping at Workplace	3	100/-
85.	Driving beyond speed limit	3	1000/-
86.	Seat Belt While Driving (for front seat passengers and driver)	3	500/-
87.	Driving without license	4	1000/-
88.	Heavy Commercial vehicles without reverse horn	3	500/-
89.	Nonfunctional Head light/ taillight and side indicators	3	100/-
90.	Using Mobile Phone During Driving	5	5000/-
91.	Poor visibility of registration number/ without registration number	3	100/-
92.	Broken/ without Side view mirror	3	100/-
93.	Over speeding above specified limit	3	500/-
94.	Broken/ Without Pressure gauge on Oxygen/ LPG / Acetylene cylinder.	3	500/-
95.	Without Flash back arrestor on Industrial Acetylene & Oxygen cylinders.	5	5000/-
96.	Spillage of hazardous material/chemicals during transportation	4	2000/-
97.	Electrical equipment without Earthing/ ELCB/ Double Insulation Cable.	5	5000/-
98.	Lifting Tools & Tackles used without/ expired Test Certificates.	5	5000/-
99.	Housekeeping repeatedly not maintained		

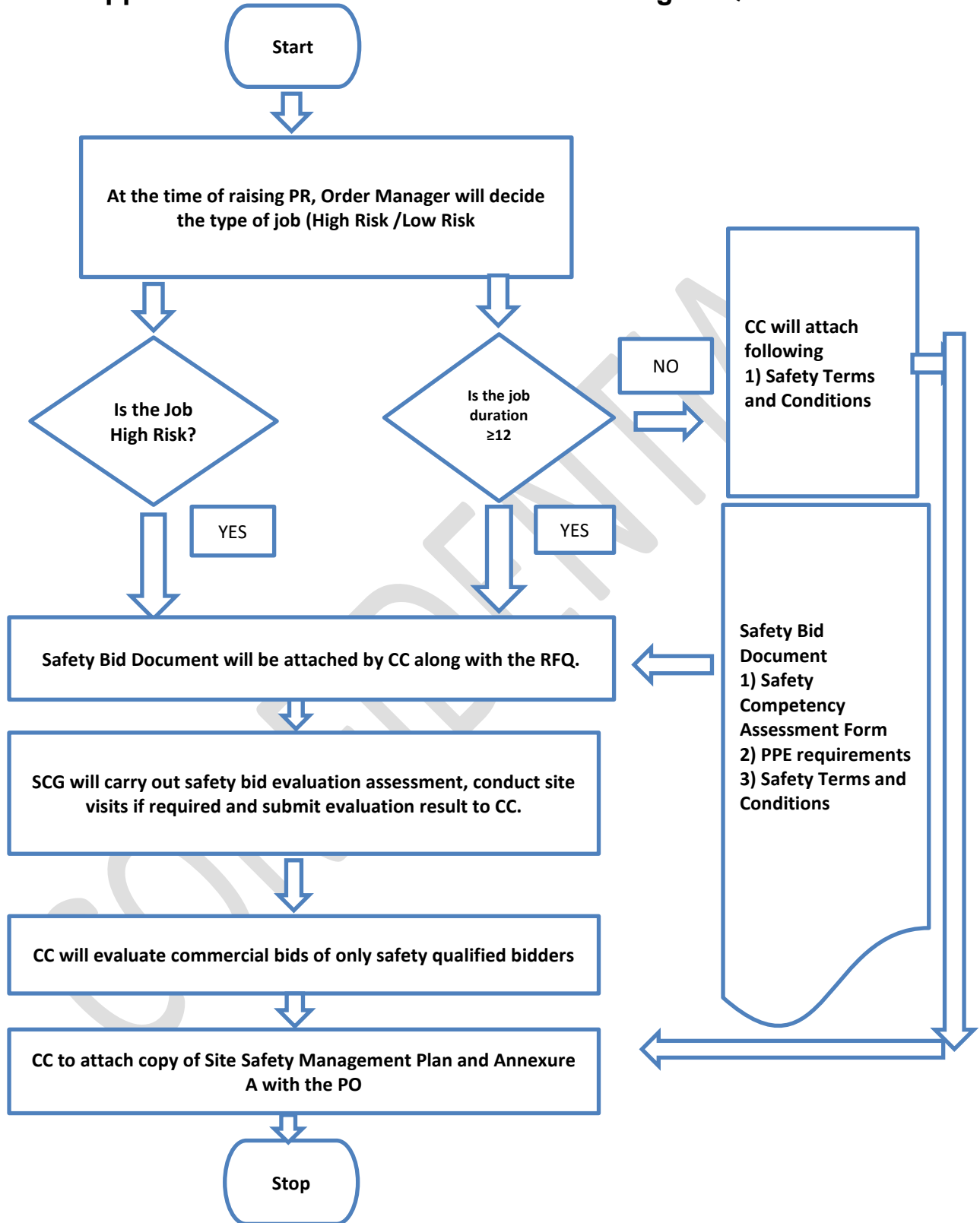


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100.	<ul style="list-style-type: none">• First Time	3	Warning
101.	<ul style="list-style-type: none">• Second Time	4	1000/-
102.	<ul style="list-style-type: none">• Third Time	5	5000/-
103.	Serious Violation of House Keeping (after 1st or 2nd warning to be decided by Project Manager depending on the severity)	5	Rs.10000/- and above
104.	Repeat Violation of same nature	5	5 X Penalty for Violation
105.	Appointment of subcontractor without his Safety Bid Evaluation and/or without the permission of engineer in charge or Order manager.	5	5% of Contract Value

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Appendix 6: Process Flow Chart for issuing RFQ and PO





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Appendix 7: CSM-F-7 Safety Competency Form (Template)

Name of the Vendor/Bidder : -

Name of the Sub Vendor (If job is given to Sub Vendor) : -

Description of the Job : -

Request for Quotation (RFQ) No. :-

Vendor/Bidder to mandatorily provide the below safety competency related information.

1. Proposed Manpower Deployment Schedule: -

Category of Manpower Deployed	Minimum Qualification & Experience	Proposed Numbers against each category month-wise			
		Month 1	Month 2	...	Month n
Project Manager					
Site-In-Charge (Site Manager)					
Shift-in-Charge					
Safety Officers					
Supervisors					
Technicians					
a.....					
b.....					
Highly Skilled Workmen					
a.....					
b.....					
Skilled Workmen					
Semi-Skilled Workmen					
Unskilled Workmen					
Total Manpower					

Instructions to Bidder to fill:

1. Bidder to provide the overall site manpower deployment schedule as above.
2. Bidder to indicate (through colour code mentioned below) their direct and sub-contracted employees

Direct bidder employee

Partly Direct / Partly sub-contracted

Sub-Contracted

3. Against each of the category, bidder to indicate the minimum qualification and experience of the proposed manpower.
4. Rows can be added to also identify other specialised manpower e.g. specific details to be included for high risk activities operators
5. Columns can be extended to the actual duration of Site activities.
6. Bidder to note that if operations is in shifts, then Shift-in-charge / safety officers are required for each shift of operation.

2. List of Tools, Tackles, Machines and Equipment: -

Bidder/ Vendor to provide the list of tools, tackles, equipment **to be used during the job / project execution**. Bidder/Vendor to ensure that all the lifting tools and tackles, pressure

vessels are duly certified by the competent person authorised by the Chief Inspector of Factories of the respective state prior to start of the job

Sr. No.	Description of Tools / Tackles	Capacity / Rating	Quantity	Make	Remarks
1					
2					
3					
4					
5					
6					
7					
...					

3. Safety Records:

Bidder to provide the details of fatalities and lost workday cases (LWDC), occurred in last three years (data to be provided for the last completed FY and preceding 2 years).

Description	Safety Data for Last 3 Years		
	Year 1 (Last FY)	Year 2	Year 3
	20__ - __	20__ - __	20__ - __
Fatalities (Nos.)			
Lost Workday Cases (Nos.)			

In case of no fatalities, LWDC during any year, the form may be filled stating NIL against the respective year. Bidders are encouraged to also submit the RCA / incident investigation reports and the learning's implemented out of the above reported incidents

4. Job Safety Plan/ Method Statement:

Bidder to provide / enclose a detailed Site/Job Safety Plan along with a Method statement detailing the execution philosophy (how the bidder intends to execute the Job/Project), identifying all key activities which are required to be performed by the contractor at Site. Bidder to also list down all high-risk activities and provide the Hazard Identification and Risk Assessment (HIRA) for all such high-risk activities involved in the site work.

(Use Method Statement template attached as annexure A and sample as attachment B)

5. Management System Certification: -

Sr.	Certification	Yes / No	If Yes, Year of Certification	If No, Next date for Certification
	ISO 9001			
	ISO 14001			
	OSHAS 18001 / ISO 45001			
	Any other (please specify.....)			

Note: Please attach certificates to support above. In case not accredited for above but applied for, application letters may be attached.

Appendix 8: CSM-F-8 PPE requirements

The Contractor shall ensure that the following PPE of Approved standards shall be available at all time and shall be used by his employees with no exception whatsoever.

1	All contractor's employees at site	Safety Florescent Jacket (orange color), Safety helmet & safety shoes with Composite or steel toe cap
2	Workers mixing asphalt, cement, lime / concrete	Safety goggle & protective Hand gloves and footwear, Nose mask.
3	Welders / Grinders	Welding screen/goggles, safety shoes, leather hand gloves, aprons, leg guard
4	Stone breaker	Protective goggle, hearing protection, anti-vibration hand gloves and Protective clothing.
5	Electricians	Rubber hand gloves & Electrical resistant shoes.
6	Workers engaged in insulation using glass wool etc.	Respiratory mask & leather Hand gloves, goggles.
	Workers engaged in coal handling plant, ash handling plant and working in high dust area.	Dust mask, Hand gloves, protective goggles.
7	Workers working at a height of 1.8 Meter or above.	Double lanyard full body harness, fall arrestor and safety net made of reinforced nylon fiber ropes firmly supported with steel structures

- PPE shall be conforming to BIS/DGMS/DIN specifications, in good condition and shall be comfortable to his employees, when used.



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Appendix 9: CSM- F-10 Site Safety Management Plan / Method Statement

Site Safety Plan / Method Statement (Template)

This Method Statement describes the specific safe working methods which will be used to carry out the described work. It gives details of work procedure with control measures to counter health and safety issues related to this work. The listed content of this Method Statement can be changed/modified subjected to job scope / specifications, but task specific method statement once finalized & approved, that should not be modified during work execution without permission from the approving authority.

Project/Job Name		
Scope of work: -		
Drawing References: -		
Detail of Sub contractors involved: -		
Method Statement Prepared By: - Designation: - (e.g. Site Manager)	<u>Signature</u>	<u>Date</u>

1.0 Introduction (*Describe purpose of the work, give details of type and scope of work being carried out*);

--

2.0 Location of Work (*Give site address and precise location on site where work is to be carried out.*)

--

3.0 Safety Document /Specific Approval Required (*Details of any safety documents or specific approval i.e. Client specific approval required to undertake the work*)

5.0 Role & Responsibilities of Personnel/Parties Involved in activities: -Clearly define role and responsibilities of all personnel involved in activity i.e. Site management staff including subcontractors' parties- Main contractor Project/Site Manager, Sub Contractor Site Manager, Project Engineer, Safety officer, Competent Supervisory Staff)

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6.0 Working/Activity Description: - It is important that all operatives should have clear idea of those operational sequences and responsible supervisor must verify their competency prior to their engagement in operation.

6.1 Pre-Working Checks

6.2 Resources (Equipment, tools including manpower) Details *i.e. Equipment and Tools, specific operational equipment, test kits, lifting resources, Details of materials to be used in operation, including any reference to COSHH assessments in case of use of any chemicals, Details of the manpower allocated to the task, e.g. titles, qualifications, competences, direct manpower, contractors. Details of plant, tools and equipment to be used for the work, including the availability of relevant statutory documents, checks or inspections etc. Details of fencing, barriers, cones, chains, dangers notices, warning signs etc.*

Tools required for work:

Sr.No	Tools /Equipment /Machine	UOM	Required Qty.	Remark
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

6.4 Operational Sequence of work: - *Full description of the work, setting out the methodology in a sequential manner, including any reference to any identified operational restraints. Also refer here sec. 5.0 responsibilities part for every step of work sequence).*

Sr.No	Activity	Details of job sequence	Risk Involved	Control Checks








1.				
2.				
3				
4				
5.				

6.7 Final Checks & restoration of work area after completion of work :- *Those checks to be carried out by responsible supervisor in witness of his line hierarchy by use of specific checklist of certain operational checks and once those completed satisfactory, PTW (if applicable) to be closed and isolation arrangements to be restored by removing barricades/cautionary tags.*

7.0 Task Specific Hazards: - *Refer to Task Specific Risk Assessment and attach in appendix*

Attachment: - Specific Risk Assessment

In addition, please provide below control measures in risk assessment (as applicable).

Fall Protection Measures: (Where Work at height cannot be avoided)							
Control Measures for Electrical Hazards							
Others Hazard if any (please provide details)							
Hazardous Substances to be used in job : (Attach MSDS if required)	 Acute Toxic	 Health Hazard	 Corrosive	 Dangerous For the environment	 Oxidising	 Highly flammable	 Explosives
	Yes /No	Yes /No	Yes /No	Yes /No	Yes /No	Yes /No	Yes /No


7.0 Emergency Provisions: *-Relevant operational possibility of a programme in the case of emergency situation i.e. electrical supply restoration. In addition emergency response provisions i.e. first aiders, fire fighting, and first aid arrangements, nearest onsite/offsite emergency response also to be considered during emergency planning.*

8.0 "5S issues" / Waste Disposal/ Housekeeping and Environmental issues: *-Details waste disposal processes and or housekeeping activities, Details of environmental impacts and control measures.*

9.0 Personal Protective Equipment (PPE):- *(Tick on PPE requirements for the task/Job*

Required Personnel Protective Equipment:							Other:
	Safety Boots	Hard Hats	Safety Gloves	Hearing Protection	Eye Protection	Respiratory Protection	1. Hi-Viz 2. Coveralls 3.

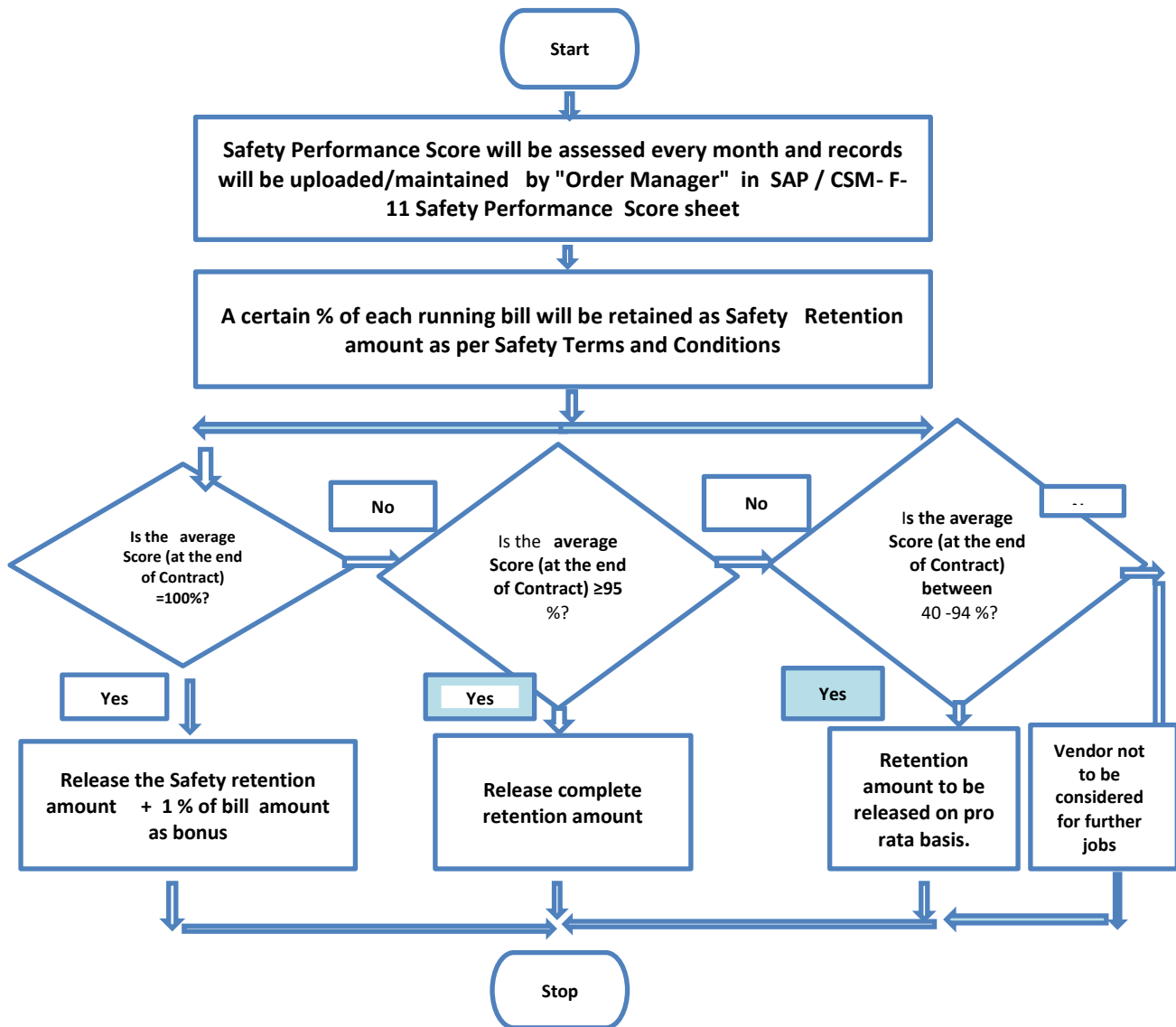
10.0 First Aid facilities and Nearby Hospitals Details

	Name of On-Site First Aider:	
	First Aid Box Location:	
	Location of Nearest Hospital:	

11.0 Occupational Health, Fitness and COVID-19 related Preparedness:

1. Please give a brief writeup / methodology of your organization planned to avoid impact of the COVID-19 pandemic at Tata Power working site.
2. Please give brief details of occupational health and hygiene related interventions planned by your organisation to ensure good health and fitness of workforce at Tata Power site.

Appendix 10: Process Flow Chart for Safety Performance Evaluation





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Appendix 11: CSM- F-11 Safety Performance Score

S. No	Parameter	Unit of Measurement	Target	Weight age	Actual Performance	Actual Score
Lead Indicator						
1	% of Employee certified in TPSDI/Authorized agency	Number	50%	10		
2	CFSA score (Annexure 6.1)	Average Severity of Violations	1.49	20		
3	Monthly inspection completed for Critical Equipment, lifting Tools & Tackles and hand tools used at site	Number	80%	10		
4	Condition of critical tools, tackles and equipment	Number	100%	10		
Lag Indicator						
1	Number of Fatalities	No	0	30		
2	Number of Lost workday case (LWDC) (reportable)	No	0	10		
3	Man-days Lost	Man-days	0	10		
					Final Score	
					Invoice Value	
					Amount to be released	



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Safety Performance Evaluation Criteria

Lead Indicators

	Target			
% of Employee certified in TPSDI/Authorized agency	50%	100%	Less than 100%	
Score		10	5	
	Target			
CFSA score	<=1.49	1.5 to 2.5	2.51 to 3.5	>=3.51
Score	20	15	10	0
	Target			
Monthly inspection completed for Critical Equipment, lifting Tools & Tackles and hand tools used at site	>=80%	79 to 50%	<50%	
Score	10	7	0	
	Target			
Condition of critical tools, tackles and equipment	100%	<100%		
Score	10	0		

Lag Indicators

Number of Fatalities	0	>0	
Score	30		0
Number of LWDC (reportable)	0	>0	
Score	10		0
Number of man days lost	0	1 to 5	>5
Score	10	5	0

Appendix 12: CSM-F-5 Safety Potential Evaluation Criteria for Vendor Registration

At the time of vendor registration, vendor will be registered under 3 categories

- 1) **Category A-** Vendors eligible to carry out High risk Jobs
- 2) **Category B-** Vendors eligible to carry out technical jobs that are low risk
- 3) **Category C-** Vendors eligible to carry out administrative and office jobs
- 4) **Category D-** Outsourced Jobs / Consultants /Medical Practitioners / Suppliers etc

For vendors to be registered under **Category A**, a safety potential evaluation will be carried out based on following parameters.

Sr. No	Description	Weight age (%)	Actual Score	Remarks
1	Does the contractor have a valid ISO 45001/ OHSAS 18001/ Certification?	30		
2	During site visit check for safety adequacy at site	30		Annexure - 12.1
3	Check the Safety statistics of Contractor	10		Annexure - 12.2
4	Check the Safety orientation & training process of Contractor	15		Annexure 12.3
5	Check the organizational structure for safety professionals & engineers / supervisors.	10		Annexure - 12.4
6	Certified/skilled workers as a percentage of overall workforce	5		
	Total	100		

Evaluation Criteria for Category B

Sr. No	Description	Weight age (%)	Actual Score	Remarks
1	Does the contractor have a valid ISO 9001 certification?	30		
2	During site visit check for safety adequacy at site	30		Annexure -12.1
3	Check the Safety statistics of Contractor	10		Annexure -12.2
4	Check the Safety orientation & training process of Contractor	15		Annexure -12.3

5	Check the organizational structure for safety professionals & engineers / supervisors.	10		Annexure -12.4
6	Certified/skilled workers as a percentage of overall workforce	5		
	Total	100		

Evaluation Criteria for Category C

Sr. No	Description	Weight age (%)	Actual Score	Remarks
1	Does the contractor have a valid ISO 9001 certification?	40		
2	Check the Safety statistics of Contractor	40		Annexure - 12.2
3	Check the Safety orientation & training process of Contractor	20		Annexure - 12.3
	Total	100		

Annexure 12.1: Evaluation Criteria for Category D:

Category D does not require any evaluation as it is for outsourced job outside the Tata Power company premise.

Annexure 12.2

Check List – Adequacy of Safety Statistics of Service Provider				Actual Marks obtained	Remarks
1	Check the safety statistics for last 3 years (LTIFR and LTISR)	Statistics available	Marks 5		
		Statistics not available	0		
2	Check the trend LTIFR for last 3 years	LTIFR value	Marks		
		0 to 0.2	5		
		0.21 to 0.3	2.5		
		>0.3	0		
3	Check the trend of LTISR last 3 years	LTISR value	Marks		
		0 to 2	5		
		2 to 3	2.5		
		>3	0		
4	Has there been any Prosecution/Conviction for any contravention with regard to Safety & Health provisions under the Factories Act /Electricity Act/ BOCW Act and Rules framed there under?	No Prosecution	Marks 10		
		Prosecution	0		
		To be provided in written on letter head			
	Total		25		

Annexure 12.3

Check List – Adequacy of Safety orientation & training process of Service provider			Actual Marks obtained	
1	Records of safety trainings provided to safety officer/supervisor/workmen during last 1 year as percentage(%) of total employed by service provider	Safety Officer	Marks	
		≥80% of employees	5	
		50 to 79 % of employee	2.5	
		<50%	0	
		Safety Supervisor	Marks	
		≥80% of employees	10	
		50 to 79 % of employee	6	
		<50%	0	
		Workmen	Marks	
		≥80% of employees	10	
		50 to 79 % of employee	6	
		<50%	0	
Total			25	

Annexure 12.4

Check List – Adequacy of organizational structure for safety professionals & engineers / supervisors.			Actual Marks obtained	
1	Check availability of number of safety officers from government recognized institute as per workforce strength.	Marks		
		1 in 50 employees		10
		1 in 100 employee		6
		Any other		0
3	Check availability of qualified workforce from government recognized institute/TPSDI.	Marks		
		100% of safety officers qualified		5
		50 – 99% of safety officers qualified		3
		<50		0
Total			15	

Appendix 13: CSM-F-9 Safety Bid Evaluation Criteria

The User has to select whether the job is high risk/ long duration at time of raising the PR.

- 1) The decision whether job is “**high risk**” or not has to be made by order manager on the basis of Risk involved (Risk Priority Number in HIRA) of the Jobs. An indicative list of high-risk jobs is attached as annexure
- 2) If a technical job is of low risk with estimated duration of the contract is 1 year or more the job should be treated as “**long duration**”.
- 3) All Safety bids will be evaluated by Safety Concurrence Group. Structure of SCG will be declared by Corporate safety. Corporate safety team will audit bid evaluation process of a few selected jobs and Quality of evaluated safety Bids.
- 4) Records of jobs sent by for Safety Bid evaluation shall be maintained by Corporate Contract team in existing tracing sheet along with other jobs.
- 5) For Safety Bid Evaluation will be based on following parameters.

		Minimum Requirement	Weight age (%)	Score Obtained
Manpower	Safety Officer (1 per 500 workers)	Qualification- Officer shall possess Advance Diploma In Industrial Safety by state technical board. Experience- Minimum 1-year experience in relevant field as mentioned in the job in PR.	5	
	Safety Supervisor (1 per work site up to max. 50 workers)	Qualification- Supervisor shall possess ITI/ Diploma in relevant field. Experience- Minimum 2-year experience in relevant field as mentioned in the job in PR. Training – Trained and certified by TPDSI or equivalent institute in relevant safety procedures. Note: On request of the contractor/Users -TPDSI should vet & certify the skilled & experienced Technician if Technical Qualification is not adequate.	5	
	Technician (Skilled workers as electrician, rigger, fitter, welder, cable jointer, line men etc)	Experience- Minimum 2 year experience in relevant field as mentioned in the job in PR. Training – Trained and certified by TPDSI or equivalent institute in relevant safety procedures.	5	

Tools & Tackles	Equipment / Machines/ Tools & Tackles(lifting and shifting tools)	The list of Equipment /Machines / Tools and tackles to be used for job to be submitted by the contractor. Evaluation of the list will be carried out based on 1) Suitability as per the relevant job 2) Make and age of the tools from authorized agencies defined by the user. 3) Certification by the competent authority of respective state.	30	
Safety Records	Safety Records	Safety Records for last 3 years (as per vendor or as per our knowledge) – Recommendation?	15	
Safety Plan	HIRA/Contract Job Safety Plan	Adequacy of HIRA and Job Safety Plan with respect to relevant job. More weight age will be given to vendor for using mechanized work and advanced tools and equipment	20	
Accredited Bodies certificate	ISO-9001	ISO-9001	2	
	ISO-14001	ISO-14001	3	
	OHSAS 18001 ISO 45000	OHSAS 18001/ISO 45000	15	
		Total Score		

- 6) Vendor entitled to carry out the job only when qualified for the safety evaluation as follows:
Contractor is qualified in safety bid only if his total score is more than 70% in all category 1 jobs such as high risk/long duration.
- 7) The Corporate Contract has to ensure that the vendor provides the filled “Safety Competency Form” along with the quotation.
- 8) Corporate Contract will forward the Safety Competency Form received from the contractor to the Safety Concurrence Group for evaluation.
- 9) In case SCG wants to visit the site, the Safety Competency will be based on evaluation at the time of site visit Annexure 13.1

Annexure -13.1:

Checklist to be used: During site visit to check the adequacy Safety systems.			
		Observation	Score* (1-5)
1	Check the adequacy of safety policy and Safety Management system of the contractor.		
2	Does the contractor have written down safety procedures?		



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3	Check the records of Near miss, unsafe act, unsafe conditions and incidents.		
4	Check the organization setup to implement the safety systems at site (safety officer, safety supervisor)		
5	Check whether safety meeting and toolbox talk carried out regularly and records maintained or not.		
6	Is the process of incident investigation adequate or not?		
7	Verify incident reporting and recording system		
8	Check the usage of equipment/tools and tackles.		
9	Check for housekeeping at site		
10	Check the use of PPEs and general behavior of workforce towards safety		
Total Score			
Site Visit Score			

Score* - rating on the scale of 1-5 to be given based on the observations on site. Score of 1 is the lowest and core of 5 is the highest.

Appendix 14: CSM-F-11.1 CFSA Format

CONTRACTOR FIELD SAFETY AUDIT						
Project Name :						
Date:						
Description of Severity rating:			Audit Team:			
	1 = Untidy area, minor issues, sets poor example					
	2 = Restricted access, unacceptable trash, disorderly					
	3 = Rule or procedure violation, potential injury					
	4 = Unsafe condition, serious injury potential					
	5 = Immediate serious injury potential, stop activity immediately and correct		Audit Time:		10:00hrs -11:30 hrs	
			Weather:		cloudy	
	Description	Responsible	Number Personnel Observed	Violations	Remarks	Leading Indicators



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		Engineer	Contractors	Good Citizens	Violators	Number of Violations	Severity	Violations x Severity		4 & 5	PPE	Unsafe Act	Unsafe Condition
Are													
a													
1													
	Sub Totals			0	0	0	0	0		0	0	0	0
	% of Observed People Working Safely												
	Number of Violations												
	Average Severity of Violations												
	Number of Severity 4 & 5 Violations												
	% of 4 & 5 Violations												
	Approximate Number of Workers Observed												
	Number of People on Site												
	% of Workers Observed												

Appendix 15: Indicative List of High-Risk Jobs

To access the exhaustive list of High-risk jobs, please refer the following documents

- 1) [High Risk Jobs- Generation](#)
- 2) [High Risk Jobs- T&D](#)
- 3) [High Risk Jobs- Renewable](#)

Indicative List of High-Risk Jobs -Generation Cluster					
Sl. No.	Jobs				
1	Demolition / Painting of Chimney				
2	Survey Sounding Jobs in Sea				
3	Dredging at Coal Birth Jetty				
4	Maintenance / Testing and Replacement of Extra High Voltage (132 KV etc.) Switchyard equipment				
5	Maintenance of EOT Cranes				
6	Deep excavation (5 feet or more) near existing buildings /Structure s				
7	Working inside confined spaces (entry through manhole)				
8	Operation Maintenance of elevators				
9	Working on Live control Circuits for identification of faults				
10	Cable laying and termination Jobs				

Indicative List of High-Risk Jobs - T&D Cluster					
Sl. No.	Jobs				
1	Transmission Line Tower Erection on columns, near live lines, In congested areas, In creeks, In the Sea				
2	Conductor Stringing on Tower Using Tensioner & Puller in the area such as Line Crossing, Near Live lines, Congested Areas, Road Crossing, Bridge Crossing, Railway line Crossing, In creeks ,In the Sea				
3	Cable Pulling by Using winch Machine in City and Rural Areas				
4	Hot Washing of HT and Extra HT lines, Towers and switchyards equipment				
5	Installation of Lifts				
6	Installation of EOT Cranes				
7	Tower Dismantling				
8	Working on H Frame /Pole mounted Transformers				
9	Excavation in operational Area heaving power cables in receiving station				
10	Identification and spiking of cable / disconnection of cables from poles				



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Indicative List of High-Risk Jobs - Renewable Cluster

Sl. No.	Jobs				
1	Working on Electrical Panels				
2	Hi Potting of Equipment				
3	Battery commissioning and maintenance				
4	Working on the nasal of Wind Turbine				
5	Working on live electrical switchyard, material Handling and Equipment installation				
6	Roof Top Solar Panels Installation and maintenance				
7	Working in live Electrical Switchyard, Material Handling, equipment installation				
8	All maintenance activities that requires climbing on Towers /Structures / Transformer/ GODs				
9	Loading and Unloading of Solar Panels on trucks				
10	Structural Repair /Dismantling work at height.				

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ANNEXURE X
TATA CODE OF CONDUCT

The Owner abides by the Tata Code of Conduct in all its dealing with stake holders and the same shall be binding on the Owner and the Contractor for dealings under this Order/ Contract. A copy of the Tata Code of Conduct is available a tour website:

<https://www.tatapower.com/pdf/aboutus/Tata-Code-of-Conduct.pdf>

The Contractor is requested to bring any concerns regarding this to the notice of our Chief Procurement & Stores e-mail ID: pkjain@tatapower.com.

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ANNEXURE XI
ENVIRONMENT & SUSTAINABILITY POLICY



CORPORATE ENVIRONMENT POLICY

Tata Power is committed to a clean, safe and healthy environment, and we shall operate our facilities in an environmentally sensitive and responsible manner. Our commitment to environmental protection and stewardship will be achieved by:

- Complying with the requirements and spirit of applicable environmental laws and striving to exceed required levels of compliance wherever feasible
- Ensuring that our employees are trained to acquire the necessary skills to meet environmental standards
- Conserving natural resources by improving efficiency and reducing wastage
- Making business decisions that aim towards sustainable development
- Engaging with stakeholders to create awareness on sustainability

A handwritten signature in blue ink, appearing to read 'Praveer Sinha', with a horizontal line underneath.

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

TATA POWER
Lighting up Lives!





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

TATA POWER
Lighting up Lives!



Annexure-I Price Bid Format
(Tender no. TPCODL/P&S/100000189/21-22)

S. No.	Description	Unit	Quantity	HSN / SAC Code	Unit Rate (Rs.)	Appl. Taxes & Duties	All Inclusive Unit Rate (Rs.)	Total All Inclusive Value (Rs.)
			A		B	C	D = B + C	E = A x D
1	Single Phase Static Meter, Class 1.0, smart meter compatible with states existing metering system, 10-60A, 240 Volts with FRP based sheet moulding compound (SMC) 2.5 mm thick confirming to IS:13410 (1992)	Nos	49,348					
2	Twin Core (unarmoured) PVC Insulated Cable of size 4.0 sq. mm with Aluminium Conductor as per REC Specification 26/1983 with average length of 27 meter per connection	Mtr	1,332,396					
3	GI Pipe of 25 mm dia medium class confirming to IS:1161 with two nos. supporting clamps of size 40X3 MS Flat as per REC Construction Standard H-1	No.	49,348					
4	ISI mark, 240 V, 16A Double Pole Miniature Circuit Breaker	Nos.	49,348					
5	1.5 sq. mm PVC Copper Multi Standard PVC Insulated Wire as per BIS Specification	Mtr.	246,740					
6	Single point wiring Wooden / Fiber Glass Reinforced Polyester sheet mounted compound (SMC) Board {200 X 150 X 40 mm (minimum)} for installing internal electrification.	Nos.	49,348					
7	Piano Type 5A, 240 V ISI Mark Switch	Nos.	98,696					
8	5A, 240 V ISI Mark Three Pin Socket	Nos.	49,348					
9	Bakelite round based / wooden round base to house lamp holder	Nos.	49,348					
10	ISI Mark 5A, 240 V Angle Bakelite / Plastic Holder Lamp Holder	Nos.	49,348					
11	LED Lamp of 9 Watts, 144-288 Volts operating voltage	Nos.	49,348					
12	Coil Earthing (No. 6 GI Wire of 40 mm dia. Coil)	Nos.	49,348					
13	GI wire of 3.15 mm (10 SWG) dia (55-95 Kg. Quality) a per IS 280 between LT Pole & Meter Box / Switch Board	Kg.	98,696					
14	Nail	Nos.	493,480					
15	Clips for supporting PVC internal wiring at every 12 inch distance	Nos.	296,088					
16	Installation Charges of Meter and Kit	EA	49,348					
Total All-Inclusive Value (Tender BOQ)								

Authorized Signatory

NOTE:

- The bidders are advised to quote prices strictly in the format attached. Break-Up of prices for line-items to be provided in format given.
- The bidder must fill each and every column of the format attached. **Mentioning "extra/inclusive" in any of the column may lead for rejection of the price bid.**
- No cutting/ overwriting in the prices is permissible.
- The prices shall be FOR TPCODL Locations.
- The bidders shall quote against each of the line items as indicated below. The quantity as mentioned above neither implies nor guarantees any minimum deployment thereunder. The above quantity is based on TPCODL estimates. It is indicative only and is not binding on TPCODL for fulfillment. Actual quantities may vary as per TPCODL's requirements.

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
Meter Management Group		

**TECHNICAL SPECIFICATION
FOR
Single Phase
Class 1, 10-60 Amp, DLMS Compliant
Whole Current Energy Meter with Meter box**

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
Meter Management Group		

CONTENTS

1. Scope
 2. Applicable Standards
 3. Climatic Conditions Of The Installation
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 12. Parameters In BCS
 13. Display units
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 15. NAME PLATE AND MARKING
 16. TESTS
 17. TYPE TESTS CERTIFICATES
 18. PRE-DISPATCH INSPECTION
 19. INSPECTION AFTER RECEIPT AT STORE
 20. GUARANTEE
 21. PACKING
 22. TENDER SAMPLE
 23. QUALITY CONTROL
 24. MINIMUM TESTING FACILITIES
-

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
Meter Management Group		

- 25. **MANUFACTURING ACTIVITIES**
 - 26. **SPARES, ACCESSORIES & TOOLS**
 - 27. **BLUE TOOTH BASED METER READING**
 - 28. **LIST OF ADDITIONAL ANNEXURES TO BE SUBMITTED BY INDIVIDUAL UTILITY**
 - 29. **DRAWINGS**
 - 30. **GUARANTEED TECHNICAL PARTICULARS**
 - 31. **SCHEDULES OF DEVIATIONS**
-

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
Meter Management Group		

1.0 SCOPE:

This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at store/site of LT Single phase two Wire, 10-60 A DLMS Compliant static energy meters of accuracy class 1.0 (here after referred as meters) complete with all accessories for efficient and trouble free operation.

2.0 APPLICABLE STANDARDS:

The equipment covered by this specification shall conform to the requirements stated in latest editions of relevant Indian/ IEC Standards and shall conform to the regulations of local statutory authorities.

- a) IS 13779 (1999) : A.C. Static Watt hour meter class 1.0 and 2.0
- b) IS 15959(Part 1-2011) : Data exchange for electricity meter reading, tariff and load control
- c) IS 15959(Part 2-2011) : Data exchange for electricity meter reading , tariff and load control
- d) IEEE 802.15.4(2003) : Standard for local and metropolitan area networks
- e) IS 9000 : Basic Environmental testing procedure for electrical and electronic items.
- f) IS 12346 (1999) : Specification for testing equipment for A.C. Electrical energy meter.
- g) IS 11000 (1984) : Fire hazard testing
- h) IEC 62052-11 (2003) : Electricity Requirements (AC) General Requirements Tests and Test conditions for A.C. Static Watt hour meter for active energy Class 1.0 and 2.0.
- i) IEC 62053-21 (2003) : A.C. Static Watt hour meter for active energy Class 1.0 and 2.0
- j) IS 15707 (2006) : Testing Evaluation installation and maintenance of AC Electricity Meters- Code of practice.
- k) IEC 60068 : Environmental testing.
- l) CBIP – TR No.325 : Specification for A.C. Static Electrical Energy Meters (latest amendment).
- m) CEA Regulation (2006) : Installation and operation of meters Dtd: 17/03/2006.

3.0 CLIMATIC CONDITIONS OF THE INSTALLATION:

- a) Max. Ambient Temperature : 55 deg.C
- b) Max. Daily average ambient temp. : 40 deg.C
- c) Min Ambient Temp : -5 deg C
- d) Maximum Humidity : 95%
- e) Minimum Humidity : 10%
- f) Average No. of thunderstorm days per annum : 50
- g) Maximum Annual Rainfall : 1450 mm
- h) Average No. of rainy days per annum : 60
- i) Rainy months : June to Oct.
- j) Altitude above MSL not exceeding : 300 meters
- k) Wind Pressure : 200 kg/sq m

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.

4.0 GENERAL TECHNICAL REQUIREMENTS:

S. No.	DESCRIPTION	REQUIREMENT
4.1	Type of the meter	Single phase two wire ,whole current meter- direct reading type without application of any multiplication constant. It also Consists of measuring elements, TOU of register, Display.
4.2	Accuracy Class of the meter	1.0

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
Meter Management Group		

S. No.	DESCRIPTION	REQUIREMENT
4.3	Basic Current (Ib) & rated Maximum current (Imax)	Ib= 10A; Imax= 60 Amps (Meter shall be able to continuously carry 120% of Imax Meeting the accuracy requirements)
4.4	Reference Conditions for testing the performance of the meter	Vref = 230 V / 240V (Complying to 230V) Frequency = 50hz Temperature= 27 °C (if the tests are made at the temperature other than reference temperature the results shall be corrected by applying Mean Temperature Coefficient 0.05)
4.5	Operating Voltage	Meter shall be operational with required accuracy from 0.6 Vref to 1.2 Vref. However meter shall withstand the maximum system Voltage of 440V (for minimum 5 min).
4.6	Operating Frequency	50 Hz± 5%.
4.7	Power Consumption	Voltage circuit: Maximum 1.5 W and 10 VA Current Circuit :Maximum 1 VA
4.8	Starting Current	20mA (0.2% of Ib)
4.9	Short time over current	1800 A for 0.01 sec (30Imax for one half cycle at rated frequency)
4.10	Influence of heating	Temperature rise at any point of the external surface of the meter shall not exceed by more than 20K with an ambient temperature at 45° C.
4.11	Rated Impulse withstand voltage	6KV (shall be applied ten times with one polarity and then repeated with the other polarity.)
4.12	AC withstand voltage for 1 min	4 KV
4.13	Insulation resistance a) Between each current (or voltage circuit) & each and every other circuit. :	5 M ohm.
4.14	Mechanical requirements	Meter shall be in compliance with clause 12.3 of IS 13779
4.15	Resistance to heat and fire	The terminal block and Meter case shall ensure safety against The spread of fire. They shall not be ignited by thermal overload of live parts in contact with them as per IS 13779. Fire retardant material shall be used.
4.16	Protection against penetration of dust and water.	Degree of protection :IP 51 or better as per IS 12063/60529, but with suction in the meter. Meter shall comply with clause 6.9 and 12.5 of IS 13779
4.17	Resistance against Climatic influence.	Meter shall be in compliance with clause 12.6 of IS 13779.
4.18	Electromagnetic Compatibility (EMC)	Requirements shall be as per CBIP technical report no 325 (latest amendment)
4.19	Accuracy requirements	Meter shall be in compliance with clause 11 of IS 13779.
4.20	Power factor range	Zero lag to Zero lead.
4.21	Energy measurement	Fundamental energy +Energy due to Harmonics
4.22	Connection Diagram	The connection diagram for the system shall be provided on terminal cover.
4.23	Self-Diagnostic feature	The meter shall have indications for UN satisfactory / non-functioning of

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
Meter Management Group		

S. No.	DESCRIPTION	REQUIREMENT
		(i) Real Time Clock (ii) RTC battery (iii) Non Volatile Memory
4.24	Initial startup of meter	Meter shall be fully functional within 5 sec after reference Voltage is applied to the meter terminals.
4.25	Alternate mode of supply to the meters	In case of power failure, reading/data shall be to downloaded with the help of battery of long life(minimum ten years)
4.26	Sleep Mode	Meter shall not go in sleep mode .Display should not be "OFF at any point of time when power up.
4.27	Internal diameter of the terminal holes Depth of the terminal holes	8.5mm (minimum) 25 mm
4.28	Clearance between adjacent terminals	10 mm (minimum)
4.29	Display	Backlit LCD, Scrolling, 10 seconds for each parameter minimum 6 Digits LCD display. The back lit must be of bright colour for proper visibility of meter reading
4.30	Security feature	Programmable facility to restrict the access to the information recorded at different security level such as read communication, write communication etc.
4.31	Software and communication compatibility	The bidder shall supply software required for communication though CMRI and BCS software free of cost and necessary training. The meter shall be compatible to communication with GSM/GPRS/RF modems in DLMS protocol.
4.32	Calibration	Meters shall be software calibrated at factory and modifications in calibration shall not be possible at site by any means. However parameters like RTC, TOD slots, billing date, display, tariff etc shall be reconfigure through CMRI and any other support will be provided without any additional cost to TPCODL till the useful life of the meters.
4.33	Usage Application	Indoor
4.34	Ultrasonic welding	Meter cover and body should be Ultrasonic/chemical welded
4.35	Meter Dimension in MM	Is not more than 170L*140W*100H
4.36	Real Time clock	Accuracy of RTC Should be as per CBIP-325 report and shall not vary by more than 6 min per year. RTC should be programmed by BCS and MRI
4.37	No display	Meter design in such a way, meter data retrieved if meter found no display.
4.38	KVAH & KVA calculation	Apparent Calculation should be Lag only

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
Meter Management Group		

5.0 Communication capabilities and software feasibilities:

The meter shall have facilities for data transfer locally through CMRI (Using optical port GSM/GPRS/RF modems).

Optical communication port shall be available for communication. Communication ports shall not be affected by any type of injection /unauthenticated signals and having proper sealing arrangement. The complete data shall be downloaded within 2 minutes. Meter Optical port base of meter to be magnetic type.

The bidder should provide DLMS compliance for Communication with the meter at Optical / RJ11 (RJ11 is optional). Optical Communication port shall be available for communication along with additional RJ11 port with specific pin configuration of utility along with sealing arrangement to communicate with GSM/GPRS/RF modems.

The XML files of downloaded data from meter will be as per MIOS standards.

The bidder shall supply software required for local (CMRI) & remote (AMI) connectivity including required training to use the software free of cost. Bidder shall provide the communication protocol / APIs as per MIOS standards for communication with meter through local (CMRI) / remote (AMI) as and when required by TPC free of cost during life of meter.

Bidder should also provide software for changing firmware of meters in mass without any additional cost.

Bidder should also provide BCS for viewing the data downloaded through CMRI/Laptop/HHU.

API required for converting raw files to XML should also provide.

Communication of the meter at optical port should be as per IS15959 (Part-2):2016 Bidder must provide necessary support if required for integration of his meters with AMR/Ami systems of the utility whenever required.

Bidder to supply protocol to read the meters supplied against, using intelligent GSM/GPRS/RF modems with store and forward feature without any additional cost. Bidder to provide API on MIOS standard to convert meter data in to XML and read API for hosting in server and modems GSM/GPRS/RF based for readings of meters from any third party manufactured modems. Bidder must provide necessary support if required during integration

6.0 Immunity against external influencing signals:

6.0.1 Magnetic Field:

Meter shall record accurate energy in case of any external influencing signals in line with IS 13779:1999 Cl.11.2 and variation in limits of error (up to 100% I_{max}) shall be as per the table 17 of IS 13779. Meter shall be immune to magnetic field such that it shall not affect the normal overall functionality However, in case of abnormal magnetic field as defined below meter shall perform as per the following features:

- a) Meter shall log the event in its memory as "MAGNET" with date and time stamp within 2 minutes of application of abnormal magnetic field and shall start recording at 100% I_{max} and after removal of magnet, back to normal recording within 2 minutes
- b) Meter shall show "Magnet" in the display.

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Abnormal Magnetic field is defined as below;

- a) Continuous DC magnetic induction: $>0.2 \text{ Tesla} \pm 5\%$ (Value of the magneto motive force to be applied shall be generally $>10000 \text{ ATs}$,
- b) AC magnetic induction: Immune for 10 milli Tesla (if produced with circular metal core with square cross section as specified in CBIP latest report with 2800 AT
- c) Permanent Magnet: Immune up to 0.5T and Event logging $>0.5T$

6.0.2 Electrostatic Discharge (ESD)

Meter shall be immune up to 50 kV and shall record accurate energy as per IS-13779:1999. Meter shall log the event into memory as 'ESD' with date & time stamp for any ESD greater than 50 kV.

The shielding around the meter shall be such that it does not get affected by high voltage, high and low energy impulse when comes in contact with meter from any side.

The meter should immune to high/ low frequency Jammer devices. Meter shall log event in its memory as jammer with date and time stamp along with snapshot.

The meter should be immune or log the tamper on application of any other higher magnetic field of any frequency waves, micro waves etc.

6.0.3 Neutral Disturbance

The meter shall log in the memory as 'NEUTRAL DISTURBANCE' with date and time stamp and show 'ND' for Frequency variation below 47 Hz and above 53 Hz with time delay of 2 min and for Pulsating DC and Chopped AC of any value with time delay of 2 min.

The meter shall not saturate on passage of direct current, which can cause the meter either to stop recording/ record inaccurately. DC injection shall be tested both in phase and neutral. Measurement by meter shall not get influenced by injection of DC signal/ DC pulse upto 330V and for any value beyond this, the meter shall log the event into memory as 'NEUTRAL DISTURBANCE' with date & time stamp after time delay of 2 min(occurrences and restoration time).

The meter shall record energy proportional to the current and V Ref (230V) when any of the tamper circuits enclosed as per annexure are used to tamper energy using a diode or a variable resistance or a variable capacitance energy saving device. The measurement by meter shall not get influenced by injection of AC Voltages/Chopped signal/DC signal/ DC pulse of low frequency and harmonics. The meter should be immune to such Neutral Disturbance. In case the meter accuracy is disturbed under Neutral Disturbance, it should be able to log the event.

6.0.4 Single Wire

Single Wire tamper (Neutral Missing): When neutral is disconnected from both load side and supply side, the meter should record energy as per rated parameters (Vref). However, meter shall start registering energy

- a) At a current of $>500\text{mA}$ under tamper condition of neutral missing (where battery is used for voltage reference). Meter will perform the fraud energy registration above 500mA assuming Vref (from battery) and Unity power factor.
- b) Condition no. 38 of Annexure I (Timer test) : The timer operation duration shall be 30 seconds.

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6.0.5 Abnormal and Tamper conditions:

The meter shall record forward energy under any abnormal conditions as given in the annexure I.

All the tamper events i.e. shall be logged in the memory of the meter with date and time stamp of occurrence and restoration along with instantaneous electrical parameter (Voltage, Current (phase and neutral), energy, pf, frequency etc.)

Meter shall store cumulative count and cumulative durations all the tamper event which have logged by meter from the date of energization till life of meter.

Tamper count shall be incremented only on the occurrence of the any tamper event with date and time Stamp on FIFO basis. The event of which the restoration not occurred those should not be removed from meter memory and FIFO should not applicable for unrestored event.

The cover open tamper detection should be through heavy duty, sturdy micro switch such that it should not Operate on vibration or impact during handling or testing.

Meter shall have neutral CT/shunt for tamper identification and analysis.

Persistence time for occurrence and restoration for the events and compartment block size shall be as per table given below

Persistence Time for Occurrences	Persistence Time for Restoration	Threshold Value for Occurrence of Events	Threshold Value for Restoration of Events	Compartment Size
ESD/JAMMER = immediate (record only 1 event on first application & only one event for next 1min)	ESD/JAMMER = 0 Hr 01 Min 0 sec (ESD) (should restore after 1 min. of last application)	Immunity up to 50 KV	Removal of ESD/ Jammer signal	25
Magnet = 0 Hr 2 Min 0 sec (MAG)	Magnet = 0 Hr 2 Min 0 sec (MAG)	>0.5 Tesla for permanent magnet OR DC magnetic induction > 0.2T OR AC magnetic induction > 10 mT	< 0.5 Tesla for permanent magnet OR DC magnetic induction < 0.2T or AC magnetic induction <10 mT	25
Meter Top Cover Open (TC Open) Immediate	Meter Top Cover Open (TC Open) immediate	If meter top cover is opened	NA	05 (Stay put Type)
Single Wire = 0 Hr 30 Min 0 sec (SW)	Single Wire = 0 Hr 2 Min 0 sec (SW)	a) At a current of >500mA under tamper condition of neutral missing (where battery is used for voltage reference). Meter will perform the fraud energy registration above 500mA assuming Vref (from battery) and UPF. b) At a current of >1 amps under tamper condition of neutral missing (where third CT is used for voltage reference). Meter will perform the fraud energy registration above 1A assuming Vref (from third CT) and UPF. c) Condition no. 38 of Annexure I (Timer test): The timer operation duration on/off time for 30 seconds with constant current for 30 min.	Voltage > 190 V	25
Neutral Disturbance = 0 Hr 1 Min 0 sec (ND)	Neutral Disturbance = 0 Hr 02 Min 0 sec (ND)	Voltage >145% of Vref, Current >10% Ib OR Frequency < 47 Hz OR Frequency > 53 Hz OR DC voltage /signal injection/ as per the conditions of clause 4.3.4	Voltage <115% of Vref Current > 10% Ib AND Frequency > 47 Hz OR Frequency < 52 Hz	25

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Persistence Time for Occurrences	Persistence Time for Restoration	Threshold Value for Occurrence of Events	Threshold Value for Restoration of Events	Compartment Size
Current Mismatch = 0 Hr 10 Min 0 sec (CM)	Current Mismatch = 0 Hr 02 Min 0 sec (CM)	$In - I_p \geq 20\%$ of I_b AND $In > I_p$ Meter recording should be on higher of the current (either phase or neutral) if there is a mismatch	$In - I_p < 20\%$ of I_b	25
Low Voltage Check = 0 Hr 30 Min 0 sec (LVC)	Low Voltage Check = 0 Hr 02 Min 0 sec (LVC)	Voltage $< 70\%$ of V_{ref} AND current $> 2\%$ I_b	Voltage $> 80\%$ of V_{ref} AND current $> 2\%$ I_b	25
Power OFF = 0 Hr 10 Min 0 sec	Power On = immediate	Actual Voltage off	Actual Voltage On	25
Over Load (If enabled) OL = 0 Hr 30 Min 0 sec	Over Load = 0 Hr 2 Min 0 sec	$> 120\%$ I_{max}	$< 100\%$ I_{max}	25
Temperature Rise = 0 Hr 30 Min 0 sec (TR)	Temperature Rise = 0 Hr 02 Min 0 sec (TR)	Temperature $> 70^\circ C$	Temperature $< 60^\circ C$	25 (Stay put type)
EL WC = 0 Hr 30 Min 0 sec	EL WC = 0 Hr 02 Min 0 sec	The difference between phase and neutral current $> 6.25\%$ of I_b	the difference between phase and neutral current $< 6.25\%$ of I_b	10

7.0 GENERAL TECHNICAL REQUIREMENTS

The Meter shall be designed and constructed in such a way as to avoid introducing any danger in normal use and under normal conditions, so as to ensure especially personal safety against electric shock, safety against effect of excessive temperature, protection against spread of fire, protection against penetration of solid objects, dust and water.

All parts, which are subject to corrosion under normal working conditions, shall be protected effectively. Any protective coating shall not be liable to damage by ordinary handling or damage due to exposure to air, under normal working conditions. Meter shall withstand Solar radiation.

The meters shall be designed and manufactured using SMT (Surface Mount Technology) components. All the material and electronic power components used in the manufacture of the meter shall be of highest quality and reputed make to ensure higher reliability, longer life and sustained accuracy as given below or any other equivalent make with the strict approval of Purchaser:

S No	Component Function	Requirement	Makes and Origin
1.	Measurement/ computing chips	The Measurement/ computing chips used in the meter should be with the Surface mount type along with the ASICs	<u>USA:</u> Anolog Devices, Cyrus Logic, Atmel, Phillips <u>South Africa:</u> SAMES <u>Japan:</u> NEC or any reputed make
2.	Memory chips	The memory chips should not be affected by the external parameters like sparking, high voltage spikes or electrostatic discharges.	<u>USA:</u> Atmel, National Semiconductors, Texas Instruments, Phillips <u>Japan:</u> Hitachi or Oki
3.	Display modules	The display modules should be well protected from the external UV radiations. The display visibility should be sufficient to read the meter mounted between height of 0.5m and 2m. The construction of the modules should be such that the displayed quantity should not disturbed with the life of display. (Pin Type) It should be trans-reflective STN	<u>Taiwan:</u> Holtek <u>Singapore:</u> Bonafied Technologies <u>Korea:</u> Advantek <u>China:</u> Xiamen

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		type industrial grade with extended temperature range.	
4.	Optical port	Optical port should be used to transfer the meter data to meter reading instrument. The mechanical construction of the port should be such to facilitate the data transfer easily.	USA: National Semiconductors Holland / Korea: Phillips Taiwan: MAXIM Japan: Hitachi
5	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm	A class vendor
6.	Electronic Components	The active & passive components should be of the surface mount type & are to be handLead & soldered by the state of art assembly processes.	USA: National Semiconductors, Atmel, Phillips, Texas Instruments Japan: Hitachi, Oki, AVX or Ricoh Korea: Samsung
7.	Battery	Lithium with guaranteed life of 15 years	Varta / Tedirun /Sanyo or equivalent.
8.	RTC / Micro controller	The accuracy of RTC shall be as per relevant IEC / IS standards	USA: Philips , Dallas, Atmel, Motorola Japan: NEC or Oki

Note: The makes of the components are in the preferential order. The bidder shall submit necessary documents for the components.

Preferred Meter OEM: Schneider / HPL / Genus / Landis+Gyr

8.0 Meter Body:

Meter body shall be made of unbreakable, high grade, fire retardant reinforced Insulating material (protective Class II) with FVo Fire Retardant, self-extinguishing, UV stabilize, recyclable and Anti oxidation properties. The minimum thickness of the meter enclosure shall be 2mm. Meter base shall be opaque with polycarbonate LEXAN 500R or equivalent on prior approval from the Purchaser. Meter cover shall be transparent with polycarbonate LEXAN 143R/943A or equivalent on prior approval from the Purchaser. Meter cover & base shall be provided with continuous and seamless Ultrasonic/chemical welding such that it is not opened without breaking the enclosure. Front cover & base shall be such that it is not possible to cut & open the meter without certainly damaging the meter body and by no means shall an attempt to reassemble would not leave physical evidence. The meter body shall be sealed in such a way that opening of meter base and cover is possible only after breaking the seal(s). Unidirectional screws to be used on meter covers where ever required. However single case meter body would be highly preferred. I.e. meter top cover and base shall be of single mould, thus nullifying the possibility of opening of meter case.

9.0 Terminals, Terminal Block

Terminals may be grouped in terminal block having adequate insulating properties and mechanical strength. In order to satisfy such requirements when choosing insulating materials for the terminal block adequate testing of materials shall be taken into account. Terminal block and terminal cover shall be of a material which complies with the requirements of IS11731 (part 1) method FH1. The material of which the terminal block is made shall be capable of passing the test given in ISO 75 for temperature of 135°C and pressure of 1.8 M Pa. The terminal block shall be of opaque with polycarbonate LEXAN500R or equivalent on prior approval from the Purchaser

The terminals shall be marked properly on the terminal block for making external connections. The terminals and connections shall be suitable to carry up to 120 % of I_{max} continuously (I_{max} 60 A).

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The terminal block, the terminal cover and the meter case shall ensure reasonable safety against the spread of fire. They shall not be ignited by thermal overload of live parts in contact with them.

The manner of fixing the conductors to the terminals shall ensure adequate and durable contact such that there is no risk of loosening or undue heating. Terminals shall be preferably of MS cage clamp type as per IS: 15707 or of flat end screw with at least 9 mm dia of screw for better contact area.

Internal diameter of the terminal holes shall be minimum 8.5 mm; minimum clearance between adjacent terminals shall be 10 mm. Depth of the terminal holes shall be of 25 mm. Terminal screws shall be of Zinc plated MS bottle type.

Terminal block shall be such that the risk of corrosion resulting from contact with any other metal part is minimized. Electrical connections shall be so designed that contact pressure is not transmitted through insulating material.

Terminal Cover:

Terminal cover shall be of short type and shall be transparent with polycarbonate LEXAN 143R/943A or equivalent on prior approval from the Purchaser. Appropriate space shall be available for incoming /out going cables without damaging/stressing terminal cover (terminal cover design shall be as per the Purchaser approval). After sealing the cover, terminals shall not be accessible without breaking the seals. Terminal Cover with 4 U cuts to enable smooth insertion of cable in the terminals.

Sealing of meter

Reliable sealing arrangement shall be provided to make the meter tamper evident and to avoid fiddling or tampering by unauthorized persons.

One no polycarbonate seal and two nos hologram seals shall be provided by the bidder. All the seals shall be fixed on meter body by the bidder at his works before dispatch.

One sealing provision shall be provided at meter terminal cover, such that terminal shall not be accessible without breaking the seals. All the seals shall be provided on front side only and as per the Purchaser specification. Rear side sealing arrangement shall not be accepted. Bidder shall provide seals as per CEA regulation (2006). Only patented seals to be used as per CEA requirements.

TOD Feature:

The meter shall be capable of measuring Cumulative Energy (KWh), KVarh Lag, Kvarh Lead, Kvah and MD (KW, KVA) with time of day (TOD) registers having 2 zones (no. of zones & time slot shall be programmable by CMRI with adequate security level). Annexure attached.

TOD Slot Configuration shall be as follows-

	Time Slots
TOD 1	22 to 06 Hrs
TOD 2	06 to 22 Hrs

11 MD Integration:

The MD integration period shall be 15 minutes (integration period-programmable by CMRI at site and also thru AMR with adequate security level). The MD resetting shall be automatic at the 1st of the month i.e. 0000 hours of 1st day of the month. Manual MD reset button shall not be available. Last 12 MD values shall be stored in the memory. MD shall be recorded and displayed with minimum three digits before decimal and minimum two digits after decimal points. MD integration shall be Block Type Demand.

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12 Parameters In BCS

All these parameters shall be downloaded locally or remotely. All the parameters shall be recorded in its NVM(Non Volatile Memory). NVM shall have minimum retention time of 10 Years. Below mention current, history billing data and at least 25 tamper event for each tamper shall be available In NVM.

Billing Information

Current+ 12 History billing Date

Current + 12 Month History of Energy (KWH, KVAH, KVARH Lag, KVARH Lead,)

Current + 12 Month History Consumption (KWH, KVAH, KVARH Lag, KVARH Lead)

Current + 12 Month History of Demand (KW,KVA, KVAR Lag, KVAR Lead) Along with date and time stamp

Current + 12 Month History of PF

Current + 12 Month Power ON/Off Hours

TOD wise billing Information

Current + 12 Month History of Energy (KWH, KVAH, KVARH Lag, KVARH Lead)

Current + 12 Month History of Consumption (KWH, KVAH, KVAR Lag, KVAR Lead)

Current + 12 Month History of Demand (KW, KVA, KVAR Lag, KVAR Lead) along with date and time stamp

Current + 12 Month History of PF

Load survey:

The meter shall be capable of recording load profile of 90 days 15 min IP for ON days only for following parameters.

Voltage

Phase Current

Neutral Current

PF

KWH

KVAH

KW

KVA

MID Night Energy:

Meter shall be capable of recording daily Midnight Energy(KWH, KVAH, KVARH Lag, KVARH Lead) and Demand(KW,KVA) 00:00 to 24:00 Hrs for 90 power ON days.

Instantaneous Parameters:

Meter shall be capable of recoding following Instantaneous parameter In Memory and should be available in BCS

Meter Serial No

Meter Type

Meter date and Time

MRI date and time

Dump date and time

Voltage

Phase Current

Neutral current

Signed Power Factor

Instantaneous Load (KW, KVA)

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Present Cumulative energy (KWH, KVAH)
Cumulative Tamper count
Cumulative Billing Count
Cumulative Power ON duration in minutes
Other Parameter as per IS15959

General Information:-

Meter shall be capable for providing below mention general parameters in memory and should be available in BCS

Meter serial No
Meter Type
Manufacture Name
Manufacture date
Meter Class
Meter constant
Meter voltage rating
Meter current rating
Firmware version of meter
TOD profile showing timing and seasons
Meter display sequence

Transactions:-

All the change in software of meter to be logged along with date and time stamp, reading and.

13 Display units:

The display unit shall be Pin type built-in liquid crystal display (Permanently backlit type LCD). The LCD shall be of STN (Super Twisted Nematic) construction suitable for maximum temperature withstands 65 degree C and minimum temperature withstands 0degree C during normal operating condition. The LCD display shall have a wide viewing angle of 120 degree. When the meter is not energized the electronic display need not be visible. The display shall not be affected by electrical, magnetic disturbances and ESD. The back lit must be green in color while in normal registration modes.

The KWh register shall have minimum 6 digits and size of the digits shall be minimum 10mmx6mm. Cumulative energy (KWh) shall be displayed without decimal in auto scroll mode. (However decimal shall be available in push button mode for high resolution display(minimum 4digits after decimal) for testing). Separate mode for high resolution display to be provided with scroll lock facility.

Persistence time for each parameter shall be 10 second. Values followed by header shall be avoided. (I.e. if MD1 is displayed in Auto scroll mode, Header (MD1) and value (say 5.23 KW) shall be shown simultaneously; it shall not be shown in successive displays. Off time shall not be available in auto scroll mode between each cycle. Auto scroll mode is restored after 30 sec, if push button is not operated.

Display Sequence

Auto Mode of Display:-
LCD Segment Check
Meter Date
Meter Time

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Cumulative KWh
Previous month Maximum Demand (KW)

Push Button Mode of Display :-

LCD Segment Check
Meter Sl. No.
Date
Time
Cumulative Kwh
Previous Month Cumulative KWh(History1-3)
Present Month MD KW followed by Date & Time
Previous Month MD KW (History1-3) followed by Date & Time
Present Month MD KVA followed by Date & Time
Previous Month MD KVA (History1-3) followed by Date & Time
Voltage
Phase Current
Neutral Current
Instantaneous Power Factor with Lag/Lead Sign
Instantaneous Load in KW

High Resolution Display Cumulative Kwh (4 Digits after Decimal) shall be provided with scroll lock facility).

Auto scroll mode is restored after 30 sec, if push button is not operated.

14 Output Device:

The meters shall have a suitable test output device. Red color blinking LED (marked as imp/kWh) shall be provided in the front. This device shall be suitable for using with sensing probe used with test benches or reference standard meters.

Power ON indication- LED or Icon on LCD Display

15 NAME PLATE AND MARKING:

Meters shall have a name plate clearly visible and effectively secured against removal. The base color of Name plate shall be white indelibly and distinctly marked with all essential particulars as per relevant standards along with the following. Serial no. series applicable for the meters shall be provided by TPCODL

- i. Manufacturer's name
- ii. Type designation
- iii. Category
- iv. Number of phases and wires
- v. Serial number (Meter serial number shall be laser printed on name plate instead on sticker)
- vi. Serial number along with barcode
- vii. Month and Year of manufacture
- viii. Unit of measurement
- ix. Reference voltage ,frequency
- x. Ref. temperature if different from 27 deg. C
- xi. Rated basic and maximum Current
- xii. Meter constant (imp/kWh)
- xiii. 'BIS' Mark
- xiv. Class index of meter
- xv. "Property of TPCODL
- xvi. Purchase Order No. & date
- xvii. Guarantee period

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- xviii. Sign of double square
- xix. Country of manufacture
- xx. Firmware version of meter

16 TESTS:

All routine, acceptance & type tests shall be carried out on the meter and meter body separately in accordance with the relevant IS/IEC. All routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards.

Following tests shall be necessarily conducted in addition to the tests specified in IS/IEC.

Routine Test

- i. AC High Voltage test
- ii. Insulation test
- iii. Test on limits of error
- iv. Test of starting current
- v. Test of no load condition

Acceptance test:

- i. AC High Voltage test
- ii. Insulation test
- iii. Test on limits of error with following loads

120% I max(72A)	I max (60A)	Ib(10A)	0.5 Ib (5A)	0.1Ib (1A)	0.05Ib (0.5A)
UPF, 0.8 lead and 0.5 lag	UPF, 0.8 lead and 0.5 lag	UPF, 0.8 lead and 0.5 lag	UPF, 0.8 lead and 0.5 lag	UPF, 0.8 Lead and 0.5 lag	UPF

- iv. Test of meter constant
- v. Test of starting current
- vi. Test of no load condition
- vii. Test of repeatability of error.
- viii. Test of power consumption.
- ix. Test for Immunity against external influencing signal as per the Purchaser specification
- x. Test for Immunity against DC Immunity as per the Purchaser specification
- xi. Test for Immunity against Tamper conditions as per the Purchaser specification
- xii. Error measurements with 38 abnormal condition as per annexure I
- xiii. Test to Influence of Harmonics
- xiv. Supply voltage and frequency variation test
- xv. Testing of self diagnostic features and tamper count increment and logging with date and time.

Type test:

- i. All tests as defined in IS 13779:1999 with latest edition.
- ii. Test against abnormal magnetic influence as per CBIP TR 325 with latest edition.
- iii. DC immunity test (injection both on phase and neutral terminal) with latest edition
- iv. Test for Material used for Terminal Block and meter body as per relevant standards with latest edition

Note:- Bidder must mention IS 13779:1999 with latest edition in factory test report.

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Special test:

- i. The bidder shall demonstrate the communication capability of the meter through communication modes as defined in the specification before conducting acceptance tests. The bidder shall ensure that API (Application protocol interface) is compatible with TPC.
- ii. Overload test at 120% of I_{max} for accuracy under different abnormal condition as per as per annexure I.

17 TYPE TESTS CERTIFICATES:

The bidder shall furnish the type test certificates of the meter for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI / ERDA as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCODL.

18 PRE-DISPATCH INSPECTION:

The successful bidder shall submit two prototype samples for further testing and compliance as per specifications and getting approval before mass manufacturing. 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.

Equipment shall be subject to inspection by a duly authorized representative of the Purchaser. Bidder shall grant free access to the places of manufacture to TPCODL's representatives at all times when the work is in progress. Inspection by the TPCODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL.

Following documents shall be sent along with material

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

19 INSPECTION AFTER RECEIPT AT STORE:

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

The successful bidder shall submit two extra boxes (unpaid) per lot delivered, with serial nos. in continuation to the lot (lot size shall be 15,000 numbers or as defined in the order) to the Purchaser for further testing and confirmation in line with the specifications and the material shall be liable for rejection, if test results are found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Project Engineering department.

20 GUARANTEE:

Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the purchaser up to a period of at least 60 months from the date of commissioning or 66 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

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mutually agreed time frame, and to the entire satisfaction of the Company, 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 Company's own charges (@ 20% of expenses incurred), from the bidder or from the " Security cum Performance Deposit" as the case may be.

Bidder shall further be responsible for 'free replacement at site' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the purchaser. Data of all defective meters sent to bidder shall be downloaded by bidder prior to repairing these meters.

Manufacture should collect disputed meter from meter stores and provide testing report of disputed meter refer by TPCODL for lifetime.

21 PACKING:

Bidder shall ensure that all material covered under this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit. The material used for packing shall be environmentally friendly.

Packing and transportation shall be as per IS 15707:206 clauses 9.1 and 9.2. Routine test report of the individual meter shall be kept inside each card board carton of the meter. Serial numbers of meters need to be mentioned in the form of barcodes on external surface of meter packing box.

22 TENDER SAMPLE:

Bidders are required to manufacture 3nos. sample meters with box as per the Purchaser specification and submit the sample along with bid for approval.

23 QUALITY CONTROL:

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.

Quality should be ensured at the following stages:

- At PCB manufacturing stage, each board shall be subjected to computerized bare board testing.
- At insertion stage, all components should undergo computerized testing for conforming to design parameter and orientation.
- Complete assembled and soldered PCB should undergo functional testing using Automatic Test Equipment (ATEs).
- Prior to final testing and calibration, sample meters shall be subjected to ageing test (i.e. meters will be kept in ovens for 24 hours at 55 Deg. C temperature and atmospheric humidity under real-life condition at its full load current. After 24 hours meter should work satisfactorily)

The Purchaser's engineer or its nominated representative shall have free access to the bidder's/manufacturer's works to carry out inspections.

24 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. The bidder shall have duly calibrated Reference Standard meter of Class 0.05 accuracy or better. The bidder's Lab must be NABL accredited. Necessary document to be submitted along with the Bid.

25 MANUFACTURING ACTIVITIES:

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

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26 SPARES, ACCESSORIES & TOOLS:

Bidder to be provide free of cost 02 nos of JIG for retrieving data from memory of meter with every new design of meter. Jig should be such that NVM can be push fit on jig and data can be retrieve from this NVM

27 Blue Tooth Meter Reading (Optional)

Inbuilt facility for blue tooth based meter reading is preferable.

28 List of additional annexures to be submitted by individual utilities during procurement process:

- a) Display sequence
- b) TOD configuration
- c) Kvah & Kva calculation method

29 DRAWINGS:

Following drawings & Documents shall be prepared based on TPCODL specifications and statutory requirements and shall be submitted with the bid:

- a) Completely filled-in Technical Parameters.
- b) General arrangement drawing of the meter
- c) Terminal Block dimensional drawing
- d) Mounting arrangement drawings.
- e) General description of the equipment and all components with makes and technical requirement
- f) Type Test Certificates
- g) Experience List
- h) Manufacturing schedule and test schedule

After the award of the contract, four (4) copies of following drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval:

S. No.	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	General Arrangement drawings	√		√
3	Terminal block Dimensional drawings	√		√
4	Mounting arrangement drawing.	√		√
5	Manual/Catalogues		√	
6	Transport/ Shipping dimension drawing		√	√
7	QA & QC Plan	√	√	√
8	Routine, Acceptance and Type Test Certificates	√	√	√

Bidder shall subsequently provide Four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, GTP, Test certificates shall be submitted after the final approval of the same to purchaser.

All the documents & drawings shall be in English language.

Instruction Manuals: Bidder shall furnish two softcopies (CD) and four (4) hard copies of nicely bound manuals (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.

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30 GUARANTEED TECHNICAL PARTICULARS:

S. No	Description	Units	As Furnished by Bidder
1	Type of meter		
2	Accuracy Class of the meter		
3	Ib & I _{max}	A	
4	Operating Voltage	V	
5	Operating Frequency	Hz	
6	Power Consumption and Burden		
7	Starting Current	mA	
8	Short time over current	A	
9	Influence of heating		
10	Rated impulse withstand voltage	KV	
11	AC withstand Voltage for 1 min	KV	
12	Insulation resistance a) Between frame & Current, voltage circuits connected together: b) Between each current (or voltage circuit) & each and every other circuit.	M ohm	
13	Mechanical requirement as per IS 13779		
14	Resistance to heat and fire (As per specification)		
15	Degree of protection		
16	Resistance against climatic influence (as per IS 13779)		
17	Electromagnetic Compatibility (EMC) as per CBIP Technical report no 88 (latest amendment)		
18	Accuracy requirements (As per IS 13779)		
19	Power factor range		
20	Energy measurement		
21	Connection Diagram for system on terminal cover	Yes/No	
22	Self diagnostic feature		
23	Initial start up of meter (meter shall be fully functional within 5 sec after reference voltage is applied to the meter terminals)		

S. No	Description	Units	As Furnished by Bidder
24	Terminal block		
	a) Depth of the Terminal holes	mm	
	b) Internal diameter of terminal holes	mm	
	c) Clearance between adjacent terminals	mm	
25	Communication capabilities as per clause 5.0		
26	Immunity against abnormal Magnetic influence,		
27	Immunity against HV ESD		
28	DC Immunity as defined in		
29	Grade of material for		
	a) Meter base		
	b) Meter cover		
	c) Terminal block		
	d) Terminal cover		
30	Total Tamper counts		
31	Recording forward energy in all conditions as per annexure I (including current/potential reversal)	Yes/No	
32	Makes of all components used in the meter.	Yes/No	
33	Non Volatile memory (Retention period)		
34	Measuring elements used in the meter		
35	Power supply to circuit in case of supply failure		
36	Display of measured values (As per specification –clause 13)	Yes/No	
37	LCD display (Type and viewing angle)		
38	Pulse rate	Imp/kWh, Imp/kVArh	
39	Name plate marking	Yes/No	
40	Routine test certificates	Yes/No	
41	Acceptance test certificates	Yes/No	
42	Type test certificates	Yes/No	
43	Guarantee certificates	Yes/No	
44	Display Sequence	Yes/No	

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S. No	Description	Units	As Furnished by Bidder
45	Tamper thresholds	Yes/No	
46	Ultrasonic /Chemical Welding of cover and Base	Yes/No	
47	Fire retardant category of meter Body And terminal block		
48	Supply of jig for retrieval of Damaged/ burnt meter.		
49	Meter shall be programed for like RTC, TOD etc		
50	Dimension of meters L*B*H		
51	KVAH & KVA calculation		
52	Meter data retrieved if meter found no display	Yes/No	
53	RJ 11 Pin configuration as per TPC	Yes/No	
54	Submit the Clause wise Compliance & mention Deviation against each clause if any	Agreed/Not Agreed	

Electronics parts

S. No.	Component Function	Requirement	Makes and Origin (to be provide by Bidder)
1.	Measurement/ computing chips	The Measurement/ computing chips used in the meter should be with the Surface mount type along with the ASICs	
2.	Memory chips	The memory chips should not be affected by the external parameters like sparking, high voltage spikes or electrostatic discharges.	
3.	Display modules	The display modules should be well protected from the external UV radiations . The display visibility should be sufficient to read the meter mounted between height of 0.5m and 2m. The construction of the modules should be such that the displayed quantity should not disturbed with the life of display. (Pin Type) It should be trans-reflective STN type industrial grade with extended	

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		temperature range.	
4.	Optical port	Optical port should be used to transfer the meter data to meter reading instrument. The mechanical construction of the port should be such to facilitate the data transfer easily.	
5	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm and Conformal coating required to protect from Environment like moisture	
6.	Electronic Components	The active & passive components should be of the surface mount type & are to be handled & soldered by the state of art assembly processes.	
7.	Battery	Lithium with guaranteed life of 15 years	
8.	RTC / Micro controller	The accuracy of RTC shall be as per relevant IEC / IS standards	
Note: Bidder shall submit necessary documents for substantiate the component makes.			

31 SCHEDULES OF 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:

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

Annexure :-1

No	Name of Condition	Graphical View	No	Name of Condition	Graphical View
1	Normal condition		2	Phase neutral interchanged at supply side4	
3	Supply-Load interchanged		4	Phase & Neutral interchanged in condition (3)	
5	Full Load Earthed		6	phase-neutral interchanged at supply side in condition (5)	
7	supply load interchanged in condition(5)		8	phase and neural wire interchanged in condition (7)	
9	Partial load earthed		10	phase & Neutral wire interchanged in condition (9)	
11	supply-load interchanging in condition (9)		12	Phase & Neutral wire interchanged in condition (11)	
13	Neutral current reversed		14	Phase & Neutral interchanged in condition 13	
15	supply load interchanging in condition 13		16	Phase-Neutral interchanged in condition 15	

No	Name of Condition	Graphical View	No	Name of Condition	Graphical View
17	Partial load earthed in condition 13		18	Phase-Neutral Interchanged in condition 17	
19	Supply-load interchanging in condition 17		20	Phase-Neutral Interchanged in condition 19	
21	Current bypass		22	Neutral Missing	
23	Neutral Missing Phase-at 2S		24	Supply -load interchanged in condition 22	
25	Phase at 2L in condition 24		26	Diode (Reversed) in Neutral	
27	Diode(forward) in Neutral		28	Full load earthed in condition 26	
29	Full load earthed in condition 27		30	Neutral Missing , diode (reversed) at 2L & earthed full load earthed	
31	Diode forward in condition 30		32	Neutral Missing, variable load at 2L & earthed, full load earthed	
33	Neutral Missing, variable capacitance at 2L & earthed, full load earthed		34	chopper in neutral	

No	Name of Condition	Graphical View	No	Name of Condition	Graphical View
35	Load earthed in condition 34		36	Neutral Missing, AC Chopper & earthed, full load earthed	
37	Neutral Missing, earthed load, diode in output and variable resistance with earthing at the input		38	Neutral Missing full load earthed at regular time interval	

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TECHNICAL SPECIFICATION FOR POLYCARBONATE METER BOX (HINGE TYPE)

1	SCOPE	This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at store/site and performance of single phase polycarbonate meter box (Hinge Type) with all accessories for trouble free and efficient operation.																						
2	APPLICABLE STANDARDS	<p>The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian/International standards and shall conform to the regulations of the local statutory authorities.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">IS: 14772-2000</td> <td>General requirements for enclosure for accessories for household and similar fixed electrical installations- Specification</td> </tr> <tr> <td>IS: 8623(Part 1)-1993</td> <td>Specification for low-voltage switchgear and control gear assemblies Part 1 for type tested and partially type tested assemblies</td> </tr> <tr> <td>IS: 11731(Part II)-1992</td> <td>Methods of test for determination of Flammability of solid electrical insulating materials when exposed to an igniting source</td> </tr> <tr> <td>IS 4249-1967</td> <td>Specification for classification and method of test for non-ignitable and self-extinguishing properties of solid electrical insulating materials</td> </tr> <tr> <td>IS 8828-1996</td> <td>Electrical Accessories- Circuit Breakers for Over Current Protection for Household and Similar Installations</td> </tr> <tr> <td>IS 5133(Part II)-1969</td> <td>Specification for boxes for the enclosure of electrical accessories</td> </tr> <tr> <td>IS 2500(Part 1)-2000</td> <td>Sampling procedure for inspection by attributes part 1 sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection</td> </tr> <tr> <td>UL 746-C</td> <td>Polymeric materials in electrical equipments</td> </tr> </table>	IS: 14772-2000	General requirements for enclosure for accessories for household and similar fixed electrical installations- Specification	IS: 8623(Part 1)-1993	Specification for low-voltage switchgear and control gear assemblies Part 1 for type tested and partially type tested assemblies	IS: 11731(Part II)-1992	Methods of test for determination of Flammability of solid electrical insulating materials when exposed to an igniting source	IS 4249-1967	Specification for classification and method of test for non-ignitable and self-extinguishing properties of solid electrical insulating materials	IS 8828-1996	Electrical Accessories- Circuit Breakers for Over Current Protection for Household and Similar Installations	IS 5133(Part II)-1969	Specification for boxes for the enclosure of electrical accessories	IS 2500(Part 1)-2000	Sampling procedure for inspection by attributes part 1 sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection	UL 746-C	Polymeric materials in electrical equipments						
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3	CLIMATIC CONDITIONS OF THE INSTALLATION	<p>The 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> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">a) Max. Ambient Temperature</td> <td style="text-align: right;">: 50 deg.C</td> </tr> <tr> <td>b) Max. Daily average ambient temp.</td> <td style="text-align: right;">: 40 deg.C</td> </tr> <tr> <td>c) Min Ambient Temp</td> <td style="text-align: right;">: 0 deg C</td> </tr> <tr> <td>d) Maximum Humidity</td> <td style="text-align: right;">: 95%</td> </tr> <tr> <td>e) Minimum Humidity</td> <td style="text-align: right;">: 10%</td> </tr> <tr> <td>f) Average No. of thunderstorm days per annum</td> <td style="text-align: right;">: 50</td> </tr> <tr> <td>g) Average Annual Rainfall</td> <td style="text-align: right;">: 750 mm</td> </tr> <tr> <td>h) Average No. of rainy days per annum</td> <td style="text-align: right;">: 60</td> </tr> <tr> <td>i) Rainy months</td> <td style="text-align: right;">: June to Oct.</td> </tr> <tr> <td>j) Altitude above MSL not exceeding</td> <td style="text-align: right;">: 300 meters</td> </tr> <tr> <td>k) Wind Pressure</td> <td style="text-align: right;">: 126kg/sq m up to an elevation of 10mtrs</td> </tr> </table> <p>The 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</p>	a) Max. Ambient Temperature	: 50 deg.C	b) Max. Daily average ambient temp.	: 40 deg.C	c) Min Ambient Temp	: 0 deg C	d) Maximum Humidity	: 95%	e) Minimum Humidity	: 10%	f) Average No. of thunderstorm days per annum	: 50	g) Average Annual Rainfall	: 750 mm	h) Average No. of rainy days per annum	: 60	i) Rainy months	: June to Oct.	j) Altitude above MSL not exceeding	: 300 meters	k) Wind Pressure	: 126kg/sq m up to an elevation of 10mtrs
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		accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g	
4.0	GENERAL TECHNICAL REQUIREMENTS		
	S. NO.	DESCRIPTION	REQUIREMENT
	1	Application	Outdoor
	2	Degree of ingress protection	Minimum IP 54
	3	Flammability requirement	FV0
	4	Grade of material	Fire Retardant Polycarbonate, Self Extinguishing, UV stabilized and anti oxidation properties
	5	Material a) Base : b) Cover :	a) Polycarbonate equivalent to Lexan 943 A/ Makrolon 6457 transparent (no colour) b) Polycarbonate equivalent to Lexan 943 A/ Makrolon 6457 with clear transparent (no color)
	6	Thickness of box	2 mm (minimum)
	7	Gasket material	Soft neoprene rubber gasket shall be provided all around the periphery of box for protection against ingress of dust & water inside the box.
	8	Material withstand temperature	125 deg. C +/- 2 deg. C
9	Dielectric withstand for the box	5 kV for 1 min	
5.0	GENERAL CONSTRUCTI ONS	<p>5.1-The meter box shall be weather proof, tamper proof and shall be made of Injection moulded reinforce polycarbonate material having FV0 fire retardant, self-extinguishing, UV stabilization and Anti oxidation properties. Base shall be transparent(no color) whereas the cover shall be completely transparent for polycarbonate material .The material for base and cover shall be Lexan 943 A/ Makrolon 6457 or equivalent with 2 mm thickness.</p> <p>5.2- The meter box shall have a taper corner for easy flow of rain water and shall have degree of minimum IP54 for protection against dust and water.</p> <p>5.3-The box shall be provided with meter mounting arrangement along with MS plate on top for mounting the meter from different manufacturers, having different mounting dimensions. The top plate shall be fixed on the base taking care of the alignment with the fixing holes provided in the base. The detail drawing of the mounting arrangement of all the meters shall be provided to successful bidders by the TPCODL. A generalized arrangement (Base of the box) for fixing of different makes of meter to be provided. Detailed Dimensional Drawing shall be provided with the Bid.</p> <p>5.4- The meter shall be mounted with the help of MS plate such that it is centrally placed in the box and there shall be clearance of 25 mm between the meter and top of the box. A minimum clearance of 30 mm shall be maintained on both sides, between meter and box. A minimum clearance of 10mm at the back & 15mm on the front shall be maintained. A minimum clearance of 50mm shall be provided from the terminal cover to the box to be provided.</p> <p>5.5- The design of the meter box shall be such as to easy facilitate easy wiring and access to meter terminals. Nylon gland of internal diameter of around 25 mm shall be provided for I/C and O/G cables of size armoured 2Cx16. The holes for I/C and O/G</p>	

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		<p>cables shall be provided in left and right side of meter box at around 30-35mm from bottom corner.</p> <p>5.7- The box cover shall be fixed to the base through two nos. Metallic Hinges having Minimum length 40 mm with three screws. The arrangement of the hinges shall be provided on left side of the box. The screws shall not be fixed from outside so that it cannot be visible from outside to avoid any manipulation. The overlapping on hinges should be such that it metallic portion should not be accessible from outside when closed, to achieve this the cover lapping to be provided. The box cover shall be open able by more than 120 degrees. All metallic parts should be well protected against corrosion.</p> <p>5.8- For holding and sealing the box, four U-shaped latches of approx..size 25 mm shall be provided on three side of box(two on right side and one each on top and bottom side).The latch shall be GI with minimum thickness of 1.2 mm. The latch shall be provided along with suitable clamp assembly in base as well as cover, such that these are fully covered by the latch after closing. The clamp along with the latch shall be provided with a sealing hole such as to provide a sealing arrangement in the assembly and alignment of holes should be perfect so that seal wire may be easily install.</p> <p>5.9- Suitable rubber gasket of suitable size (properly fixed throughout the periphery in groove without any white marks) for protection all around the cover shall be provided.</p> <p>5.10. The box shall be provided with four mounting (fixing) holes of 8 mm size. The screws and gitties of 6mm size with around 50mm length to be provided for mounting of box in each box in packed in a separate pack.</p> <p>5.11- After closing and sealing the meter box, it shall not be possible to forcefully enter any sharp object inside the box without breaking base/cover. The material should not be flexible to allow any deformation for any object entry . Suitable overlapping (8 mm) shall be provided between base and cover to avoid access to the meter or its accessories inside the meter box by any means after sealing the box.</p> <p>5.12- Box shall be provided with 1 no. earthing nut and bolt of size M8x35 mm on the left hand side in the base of meter box for providing earth connection. The earth terminal shall be identified by means of the sign ,marked in a legible manner on or adjacent the terminal.</p> <p>5.13 The box size should be such that it should accommodate the meter having top opening hinged terminal cover</p> <p>5.14 The earthing bolt and the gland shall be connected with metallic GI plate of 1.2mm thick. This plate shall be placed inside of the box.</p> <p>5.15 The glands should be of 25 mm diameter and without inclined length but should have extended threads of 15mm inside box and a gland cap should be fixed on this gland from inside. The inside gland cap shall have opening of 18mm on the side of the earthing bolt incomer side and other side gland cap (outgoing) shall have 16mm opening.</p> <p>5.16 The box cover and base should have overlapping of more than 8mm long from inside and outside (Cover design should ensure the same) Such that the cover and the</p>
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		<p>base once fixed one should not force insert any sharp object or screwdriver etc. This shall be tested at any sample during tendering, pre-manufacturing or during supply.</p> <p>5.17 Push button arrangement (spring loaded) shall be required on the cover of the box to operate the meter display push button from outside the meter box for reading the meter display parameters in absence of power supply without opening the meter cover. The base of the box shall be provided with multiple arrangements so that different makes of meters may also be fitted.</p> <p>5.18 Two nos. of holes of adequate size capable of accommodating service cable shall be provided at two sides of the box for cable incoming & outgoing. It shall not be possible to access the meter terminals from outside of the meter box. Suitable arrangement to be provided.</p>												
6.0	NAME PLATE AND MARKING	<p>The meter box shall be provided with durable and legible marking laser printed / embossing. The following shall be embossed / laser printed with "PO No with date" , "PROPERTY OF TPCODL" , "ITEM CODE NUMBER" , The name plate shall be indelibly and distinctly marked with all essential particulars as per the relevant standards along with the following information :</p> <ol style="list-style-type: none"> Manufacturer's name Serial number Month and Year of manufacturing PO Number & date Property OF TPCODL-Odisha Danger Sign 												
7.0	TESTS	<p>All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All routine & acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the meter box in addition to others specified in IS/IEC standards.</p>												
7.1	Type Test	<table border="1"> <thead> <tr> <th>S. No.</th> <th>Tests/ Standard</th> <th>Requirements</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Protection against electric shock (IS : 14772 - 2000)</td> <td>Enclosure shall be so designed that when they are mounted as for normal use, the live parts of any correctly installed accessories or any parts of these accessories which may become live due to a fault shall not be accessible.</td> </tr> <tr> <td>2</td> <td>Provision for earthing (IS : 14772-2000)</td> <td>Enclosure shall be provided with a facility for permanent and reliable connection to earthing</td> </tr> <tr> <td>3</td> <td>Resistance to ageing, humid conditions, Ingress of solid objects and to harmful ingress of water (IS : 14772-2000)</td> <td> <p>Resistance to Ageing : Enclosure shall be kept in a heating cabinet with temp 70 ± 2 deg C for 7 days as per IS. After completion of test, the enclosure shall not show any cracks.</p> <p>Humid conditions : Enclosure shall be kept in a cabinet with humidity between 91 to 95 % for 7 days as per IS. After completion of test, the enclosure shall not show any crack.</p> <p>Resistance against ingress of solid objects and to harmful</p> </td> </tr> </tbody> </table>	S. No.	Tests/ Standard	Requirements	1	Protection against electric shock (IS : 14772 - 2000)	Enclosure shall be so designed that when they are mounted as for normal use, the live parts of any correctly installed accessories or any parts of these accessories which may become live due to a fault shall not be accessible.	2	Provision for earthing (IS : 14772-2000)	Enclosure shall be provided with a facility for permanent and reliable connection to earthing	3	Resistance to ageing, humid conditions, Ingress of solid objects and to harmful ingress of water (IS : 14772-2000)	<p>Resistance to Ageing : Enclosure shall be kept in a heating cabinet with temp 70 ± 2 deg C for 7 days as per IS. After completion of test, the enclosure shall not show any cracks.</p> <p>Humid conditions : Enclosure shall be kept in a cabinet with humidity between 91 to 95 % for 7 days as per IS. After completion of test, the enclosure shall not show any crack.</p> <p>Resistance against ingress of solid objects and to harmful</p>
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			ingress of water : Enclosure shall be subjected to test for degree of protection (IP 55/54) as per IS 12063 IS 60529.	
		4	Mechanical strength/ Impact Resistance Test (IS : 14772-2000)/(UL : 746 C)	The sample shall be subjected to Impact resistance test as per the respective standards and shall not show occurrence of any of the following: making uninsulated live parts accessible to contact, producing a condition that might affect the mechanical performances of the enclosure, producing a condition that would increase the likelihood of an electric shock
		5	Resistance to heat / Ball Pressure Test (IS : 14772-2000)	The test shall be made on a sample in a heating cabinet at a temp of 125 ±2 deg C for 1 per IS. After completion of test, the diameter of the impression caused by the ball shall be measured and should not exceed 2 mm.
		6	Resistance to Abnormal heat and fire/ Glow wire test (IS : 14772-2000)	Parts of insulating materials which might be exposed to thermal stresses due to electric effects shall not be affected by abnormal heat and by fire. The compliance shall be checked by means of the glow wire test performed at 960 deg C, according to IS 11000(Part 2/sec 1) with no flame and glowing.
		7	Resistance to Tracking (IS 14772-2000)	The sample when tested as per clause no 17 of IS: 14772, shall show no flashover after completion.
		8	Flammability test (IS : 11731 (Part II)- 1986)/UL :94)	The sample shall comply to flammability requirements of category FV0/V0 as per respective standards
		9	Test for self- extinguishing property (IS:4249-1967)	The sample when tested as per clause 3.5.1 of IS 4249, shall comply to the specified requirements.
		10	Test for water absorption (IS: 5133 (Part II)-1969)	The sample shall be heated to a temperature of 50 ± 3 deg. C for 24 h, as per IS and after completion, the water absorbed should not be more than 1%.
		11	Verification of Die-electric properties (IS :8623 (Part I)-1993)	The enclosure shall be tested as per clause no 8.2.2 of IS 8623(Part 1), with test voltage of 5 kV for 1 minute and withstand it satisfactorily.

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		12	UV Light Exposure (UL-746C)	<p>The sample when exposed to UV light as per the defined test method, shall comply to following</p> <p>a) Physical Properties: The average value of physical properties after the UV light exposure shall not be lower than 70% of its initial value (without UV aging) i.e. the variation shall not be more than 30%.</p> <p>b) Flammability Test : After the UV light exposure, the flammability requirement of FV0 shall remain unchanged.</p> <p>c) Flexural Strength: After the UV light exposure, Flexural strength shall not be lower than 70% of its initial value (without UV aging) i.e. the variation shall not be more than 30 %.</p>
7.2	Routine tests	<ol style="list-style-type: none"> 1. Marking 2. Visual Examination and Dimensions 3. Protection against electric shock 4. Provision for earthing 		
7.3	Acceptance Tests	<ol style="list-style-type: none"> 1. Marking 2. Visual Examination and Dimensions 3. Protection against electric shock 4. Provision for earthing 5. Mechanical strength/Impact Resistance Test 6. Resistance to Abnormal heat and fire/ Glow wire test 7. Flammability test 8. Verification of Die-electric properties 9. Finishing of box 		
8.0	TYPE TEST CERTIFICATES	<p>The bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA/UL or equivalent accredited labs as per the relevant standards. Type tests should have been conducted in certified Test laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to the Purchaser.</p>		
9.0	PRE-DISPATCH INSPECTION	<p>The successful bidder shall submit one pre-manufacturing sample samples (non-returnable) for further testing and compliance as per specifications and should get approval from TPCODL before mass manufacturing. Equipment shall be subject to inspection by a duly authorized representative of the Purchaser. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to the Purchaser's representatives at all times when the work is in progress. Inspection by the</p>		

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
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		<p>Purchaser or it's authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by the Purchaser.</p> <p>Following documents shall be sent along with material :</p> <ol style="list-style-type: none"> a) Test reports b) MDCC issued by Purchaser c) Invoice in duplicate d) Packing list e) Drawings & catalogue f) Guarantee / Warrantee card g) Delivery Challan h) Other Documents (as applicable)
10.0	INSPECTION AFTER RECEIPT AT STORE	<p>The material received at Purchaser's store shall 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 Engineering department.</p> <p>TPCODL can send any of the supplied material for further testing at any lab for compliance of material in line with the specifications and the material shall be liable for rejection, if test results are found different from the reports of the pre-dispatch inspection or tender test reports.</p>
11.0	GUARANTEE	<p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process/manufacturing of items under the 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 60 months from the date of commissioning or 66 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 his own costs, within mutually agreed timeframe, 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. In case box fails within the guarantee period, the purchaser will immediately inform the bidder who shall take back the failed box within 15 days from the date of intimation at his own cost and replace/repair the box within forty five days of date of intimation with a roll over guarantee.</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	<p>Bidder shall ensure that all the equipment covered under this specification shall be prepared 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>
13.0	TENDER SAMPLE	<p>Bidders are required to manufacture three sample boxes as per the TPCODL specification and submit the sample boxes along with the bid for further testing and approval of samples. These samples shall be retained till the final PO placed against tender and for successful bidder these shall be retained till final supply against order.</p>
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. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.</p>

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
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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 Indian/International standards.																																																
16.0	MANUFACTURING ACTIVITIES	The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.																																																
17.0	SPARES, ACCESSORIES AND TOOLS	Not applicable																																																
18.0	DRAWING AND DOCUMENTS	<p>Following drawings and documents shall be prepared based on Purchaser specifications and statutory requirements and shall be submitted with the bid :</p> <ol style="list-style-type: none"> Completely filled in Technical Particulars (GTP) General description of the equipment and all components & accessories General arrangement for meter box Experience List Type test certificates <p>After the award of the contract, soft copies of following drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval.</p> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Description</th> <th>For Approval</th> <th>For Review Information</th> <th>Final Submission</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Technical Parameters (GTP)</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>2</td> <td>GA Drawing of meter box with all details and marking of pillars</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>3</td> <td>QA & QC Plan</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>4</td> <td>Test Certificates</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> </tbody> </table> <p>After the receipt of the order, the successful bidder will be required to furnish all detailed drawings of components for TPCODL approval.</p>	S. No.	Description	For Approval	For Review Information	Final Submission	1	Technical Parameters (GTP)	✓		✓	2	GA Drawing of meter box with all details and marking of pillars	✓		✓	3	QA & QC Plan	✓	✓	✓	4	Test Certificates	✓	✓	✓																							
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TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
Meter Management Group		

		b)	Minimum clearance between meter and box on 4 sides	mm	
		c)	Minimum clearance from meter on front	mm	
		d)	Minimum clearance from back of meter	mm	
		e)	Earthing arrangement	Numbers	
		f)	Sealing Arrangement (with length)	Numbers	
		g)	Colour of Meter Box (base & cover)		
		h)	Box mounting arrangement with four screws provided	Yes/No	
		i)	Push Button Arrangement		
		i)	A. Size of incoming & outgoing cable hole is 25mm B. location of hole from bottom base (30-40mm)	Yes/No	
		j)	Weight of complete box in kg with +/- tolerance	kg	
		k)	Cover is overlapping the base more than 8 mm from inside and outside of box base	Yes/no	
		l)	4 Number Gitti and screws provided with M6 Screw with min. length 50mm	Yes/no	
		m)	MS plate for meter mounting provided on Top side (without sharp corners)		
		n)	Two nos. GI Hinges having Minimum length 40 mm with three screws	Number & mm	
		o)	Angle of Box opening	degree	
		p)	Number of U-shaped GI clamp & latches – 4	Number	
		q)	GI U clamp with 1.2mm thickness on three sides having min.25mm length	Yes/No	
		r)	Sealing hole to be provided in clamp and latches		
		s)	Overlapping of cover on base inside and outside	mm	
		t)	Number and size of earthing M8 bolt with 35mm length	Number & mm	
		u)	Location of earthing bolt on Sides above side gland		
		v)	Earthing sign with green background on GI sheet to be provided near earth bolt		
		w)	Two nos. of holes of adequate size capable of accommodating service cable shall be provided at two sides of the box for cable incoming & outgoing. It shall not be possible to access the meter terminals from		

TP Central Odisha Distribution Limited		Specification for Single Phase DLMS Energy Meter (10-60A)
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			outside of the meter box. Suitable arrangement to be provided.		
		11	Name plate and marking		
		12	Type test Report		
		13	The both gland provided with inside gland cap		
		14	The earth connectivity plate between incoming gland and earth bolt provided with 1.2mm thick GI		
		15	Gland cap thickness 3mm and design per annexure-1 having 15mm threading width for fixing on gland from inside box.		
		16	Mounting pillars as per annexure 2 and agreed to provide any changes in future as per prevailing meters & TPCODL requirements		
		17	The box size is suitable for single phase meter having top opening hinged terminal cover (Suitability shall be tested on samples)		
		18	Clause wise Compliance & mention Deviation against each clause if any	Agreed /Not Agreed	

20.0	SCHEDULE OF DEVIATION	<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 style="text-align: center;"><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" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">S. No.</th> <th style="width: 25%;">Clause No.</th> <th style="width: 50%;">Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td></td> <td></td> </tr> </tbody> </table>	S. No.	Clause No.	Details of deviation with justifications				
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		<p>We confirm that there are no deviations apart from those detailed above.</p> <p>Seal of the Company Signature :</p> <p style="text-align: right;">Designation :</p>							

F.No. 44/2/2016-RE
Government of India
Ministry of Power
Shram Shakti Bhawan, Rafi Marg, New Delhi – 110 001

Dated, 20th October, 2017

To

1. Chief Secretaries of all States/UTs.
2. Secretary (Power/Energy) of all States / UTs.
3. CMDs of all State Power Utilities.
4. CMD, Rural Electrification Corporation Ltd, SCOPE Complex, New Delhi.
5. Chairman & Managing Director, PFC Limited, Urja Nidhi, Barakhamba Road, New Delhi.

Sir/Madam,

Subject: Guidelines for Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya).

In continuation of the Ministry of Power Office Memorandum of even number dated 11.10.2017 notifying the Saubhagya scheme, undersigned is directed to forward herewith the operational guidelines for implementation of the scheme, for information and necessary action.



(S. Venkateshwarlu)
Under Secretary to the Government of India
Tele: 011 – 2371 9637
Email: s.venkat64@nic.in

Copy, along with enclosure, forwarded to:

1. Cabinet Secretariat (Shri S.G.P. Verghese, Director) with reference to his Memo. No. CCEA/24/2017 dated 26.9.2017.
2. Prime Minister's Office (Shri Ajit Kumar, Deputy Secretary).
3. Chief Executive Officer, Niti Aayog, New Delhi.
4. Secretary, Department of Expenditure, Ministry of Finance, New Delhi.
5. Chairman, Central Electricity Authority, Sewa Bhawan, R.K.Puram, New Delhi.

Copy, along with enclosure, to the following:

PS to Hon'ble MoSP(IC)/PPS to Secretary/PPS to AS(SP)/PPS to JS(Dist)/ PPS to JS&FA/PS to Director (RE)/ PS to Dir (IPDS), Ministry of Power.

Copy, along with enclosure, also forwarded to Technical Director, NIC, Ministry of Power with a request to upload on MoP website.

Annexure-V

1. **Single Phase Service Connection (As per REC Specification 5/1986)**

Service connection: General arrangement shall be as depicted in REC Construction Standard drawing H-1 to H-3. For all consumers, the contractor shall carry out following works:

- a. Service line from nearby LT pole, 3.15 mm dia (10 SWG) GI Service Earth Wire, reel insulators,
- b. Service Support of MS Angle with 25 mm dia PVC Pipe or 25 mm dia Medium class GI Pipe
- c. Installation of Meter Board, 1-Phase Energy meter, Meter Cover Box, Two-Pole Single Phase Protective Miniature Circuit Breaker, Earthing Terminal
- d. Internal wiring comprising of minimum 10 feet long PVC pipe wiring, switch board housing 1 no. 3-pin socket, 2 nos. switch only, 1 no. lamp box with holder and LED Lamp,
- e. Testing of consumer meter at distribution licensee's test laboratory,

Above scope of works shall comprise following materials:

- 1.1. Service Line: Twin Core (unarmored) PVC insulated cables of size 4.0 mm^2 with Aluminum Conductors as per REC Specification 26/1983 shall be used

PVC insulated cables with embedded bearer wire as per REC Specification No.27 /1983 shall be used in costal and polluted areas, where corrosion of G.I bearer wire is a major issue.

Following is to be ensured for erecting service cables:

- a. PVC cable shall be joints free.
 - b. Cables shall have substantial weather proof and weather resisting properties.
 - c. The maximum permissible span from pole to house shall not be more than 35 meters or shorter as indicated in REC Construction Standards H-1 to H-3.
- 1.2. GI wire of 3.15 mm (10 SWG) dia (55-95 kg. quality) as per IS 280 shall be used invariably when insulated services cable is preferred between LT Pole and Meter box. GI wire should not have joint(s) between pole and earth terminal. The service wire shall have ground clearance of 5800mm across the road, 5500mm along the road and 4000mm elsewhere. The span should not be more than 35 meters.

-
- 1.3 The service cable should be taken through suitable porcelain spool or any other insulating cleat attached with bearer wire by means of binding wire. Porcelain spool or /cleat shall spread at each meter length on cable run between pole and service pipe
- 1.4. Service Support: Service support shall comprise of either MS Angle with PVC pipe 25mm dia conforming to IS: 2509 or GI Pipe of 25mm dia medium class conforming to IS: 1161 or rigid steel conduit of very heavy duty high protection category conforming to IS: 9537 (Part-II), GI pipe or MS angle 35mmx35mmx5mm shall be clamped firmly using 40x3mm MS flat clamps at at-least two locations as per REC Construction Standard H-1.
- 1.5 Meter Board: The meter board should be preferably of the box type with sides covered and back open i.e. the meter board will have a frame all round having a clear depth of 40mm to which front board will be fixed. Size of the meter board should be 350 x 200 x 40mm. Each meter board shall be provided with 4(four) anchor bolts of 6 mm. Meter board shall be of Teak Wood or any suitable hard wood or Fiber Glass Reinforced Polyester sheet moulding compound (SMC) board. Following shall be taken in to consideration on meter board:
- a) Meter board of dimension 200 x 350 x 40mm (minimum) should house single phase Energy Meter with cover box, Earth point/terminal as per Rule 33 (1) of IE Rules 1956 and two pole single phase miniature circuit breaker.
 - b) No other item should be installed on meter board.
 - c) Meter board may be installed outer wall of house or inside wall of house depending on suitability at site and as per state practices.
 - d) While installing meter board care should be taken not to expose meter board to direct sunlight or rain.
 - e) The earth terminal shall be installed and maintained by DISCOM/Distribution licensee.
 - f) Meter Board should be installed at a height of 7 to 8 feet above the ground level depending on availability of height in consumer house.
 - g) Earthing point of three-pin socket should be connected with earth point installed on the meter board.
- 1.6. Single Phase Energy Meter – Fully static, class 1.0, smart meter compatible with state's existing metering system, 5-30A, 240 Volts. Meter body and cover shall be

sealed after testing and adjustment with the sealing plier in association with DISCOM officials

- 1.7. Sheet metal meter box or Fiberglass Reinforced Polyester (FRP) based sheet moulding compound (SMC) 2.5 mm thick conforming to IS:13410 (1992) may be used for meter protection as per prevailing state practices on ensuring statutory compliance.
- 1.8. House wiring: Each Household shall be provided with a switch board, 1 no. angle Holder, up-to 9 watts 1 no. LED Lamp, internal wiring (average 10 feet long per household) between holder and switch board & meter and switch board. Internal wiring shall be done by using 1.5 mm² PVC copper wire multi-strand as per BIS specifications.

Following are the details of house hold wiring: Single Point Wiring Wooden/Fiber Glass Reinforced Polyester sheet moulding compound (SMC) board {200x150x40 (minimum)} should be installed at normal operating height of 5 feet from existing floor level. Following accessories shall be installed under internal electrification work:

1. 1 No. LED Lamp of 9 Watts (capable to produce minimum illumination of 710 lumens), pin type, lamp, 144-288 Volts operating voltage range as per specifications.
2. 2 Nos. ISI mark, Piano type 5A, 240V, Switch.
3. 1 No ISI mark, 5A, 240V, three-pin socket,
4. ISI mark, 5A, 240 volts, 1 no. angle Bakelite/plastic holder lamp holder.
5. Bakelite round base / wooden round base to house Bakelite holder,
6. ISI mark, 240V, 16A Double Pole miniature circuit breaker.
7. PVC insulated and PVC sheathed single core 1.5 sq mm copper multi-strand conductor cable as per IS 694/1990 (ISI marked) wiring on PVC pipe (ISI marked) IS 2509 as per specification,
8. Clips for supporting PVC internal wiring at every 12 inch distance.

**R.E.C.
CONSTRUCTION STANDARD
H-1**

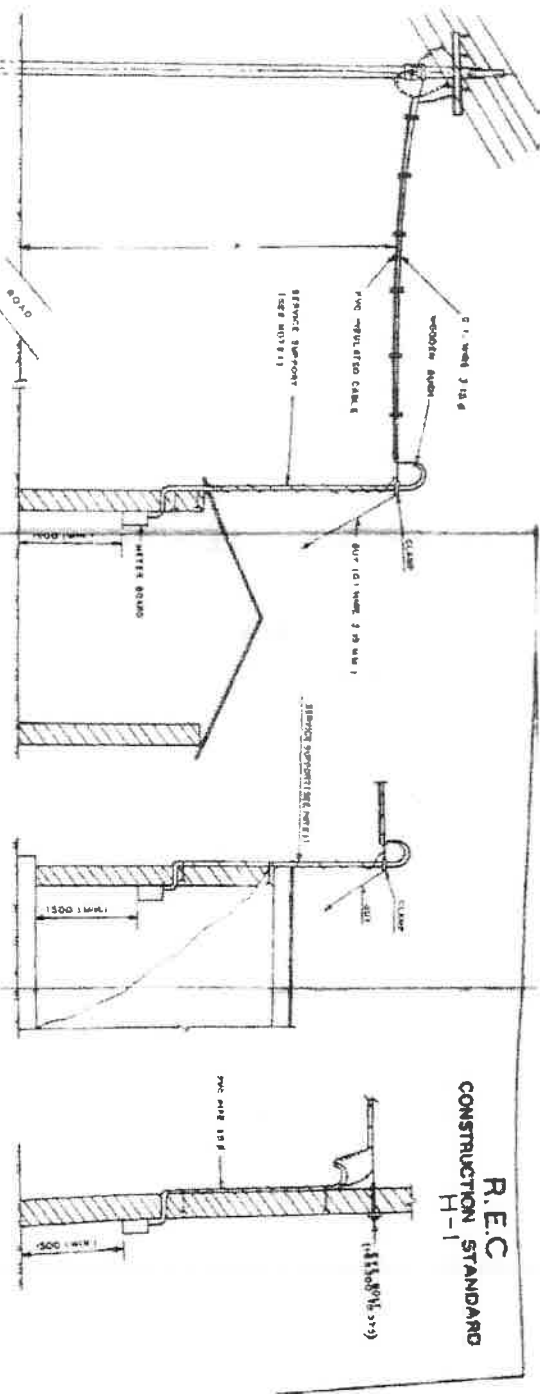


TABLE - I
TYPE/SIZE OF SERVICE CABLES

TYPE OF CABLE	CONSTRUCTION	SIZE
1. PVC INSULATED	3 CORE	10 mm ²
2. PVC INSULATED	3 CORE	16 mm ²
3. PVC INSULATED	3 CORE	25 mm ²
4. PVC INSULATED	3 CORE	35 mm ²
5. PVC INSULATED	3 CORE	50 mm ²
6. PVC INSULATED	3 CORE	70 mm ²
7. PVC INSULATED	3 CORE	100 mm ²
8. PVC INSULATED	3 CORE	150 mm ²
9. PVC INSULATED	3 CORE	200 mm ²
10. PVC INSULATED	3 CORE	250 mm ²
11. PVC INSULATED	3 CORE	300 mm ²
12. PVC INSULATED	3 CORE	350 mm ²
13. PVC INSULATED	3 CORE	400 mm ²
14. PVC INSULATED	3 CORE	450 mm ²
15. PVC INSULATED	3 CORE	500 mm ²
16. PVC INSULATED	3 CORE	550 mm ²
17. PVC INSULATED	3 CORE	600 mm ²
18. PVC INSULATED	3 CORE	650 mm ²
19. PVC INSULATED	3 CORE	700 mm ²
20. PVC INSULATED	3 CORE	750 mm ²
21. PVC INSULATED	3 CORE	800 mm ²
22. PVC INSULATED	3 CORE	850 mm ²
23. PVC INSULATED	3 CORE	900 mm ²
24. PVC INSULATED	3 CORE	950 mm ²
25. PVC INSULATED	3 CORE	1000 mm ²

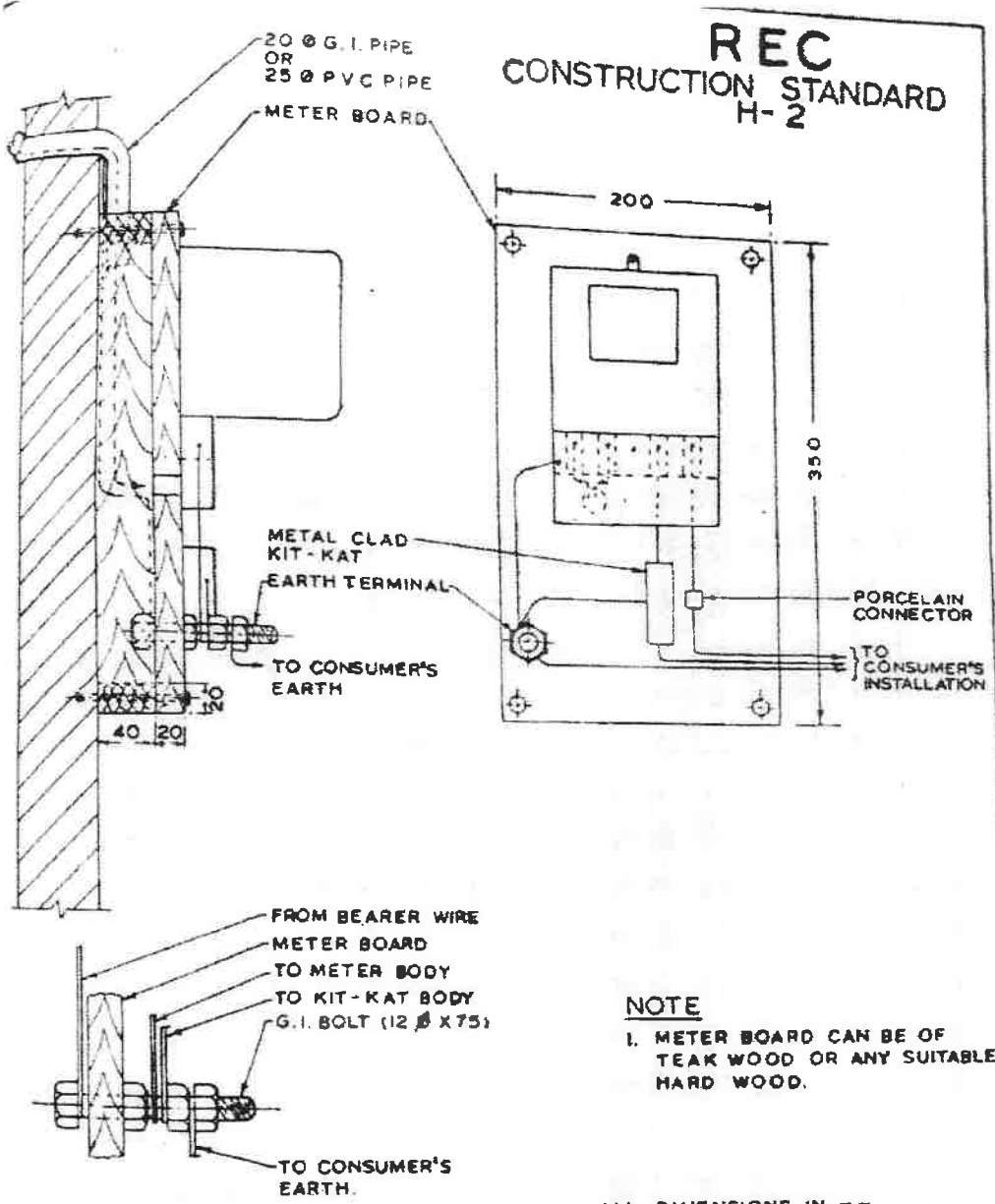
TABLE - II
TYPE/SIZE OF SERVICE SUPPORTS AND PERMISSIBLE SPANS

TYPE OF SUPPORT	SIZE OF SUPPORT	PERMISSIBLE SPAN IN METERS	
		ALONG THE ROAD	ACROSS THE ROAD
1. WOODEN ARCH	1000 mm x 100 mm	15.0	10.0
2. WOODEN ARCH	1500 mm x 100 mm	20.0	15.0
3. WOODEN ARCH	2000 mm x 100 mm	25.0	20.0
4. WOODEN ARCH	2500 mm x 100 mm	30.0	25.0
5. WOODEN ARCH	3000 mm x 100 mm	35.0	30.0
6. WOODEN ARCH	3500 mm x 100 mm	40.0	35.0
7. WOODEN ARCH	4000 mm x 100 mm	45.0	40.0
8. WOODEN ARCH	4500 mm x 100 mm	50.0	45.0
9. WOODEN ARCH	5000 mm x 100 mm	55.0	50.0
10. WOODEN ARCH	5500 mm x 100 mm	60.0	55.0
11. WOODEN ARCH	6000 mm x 100 mm	65.0	60.0
12. WOODEN ARCH	6500 mm x 100 mm	70.0	65.0
13. WOODEN ARCH	7000 mm x 100 mm	75.0	70.0
14. WOODEN ARCH	7500 mm x 100 mm	80.0	75.0
15. WOODEN ARCH	8000 mm x 100 mm	85.0	80.0
16. WOODEN ARCH	8500 mm x 100 mm	90.0	85.0
17. WOODEN ARCH	9000 mm x 100 mm	95.0	90.0
18. WOODEN ARCH	9500 mm x 100 mm	100.0	95.0
19. WOODEN ARCH	10000 mm x 100 mm	105.0	100.0
20. WOODEN ARCH	10500 mm x 100 mm	110.0	105.0
21. WOODEN ARCH	11000 mm x 100 mm	115.0	110.0
22. WOODEN ARCH	11500 mm x 100 mm	120.0	115.0
23. WOODEN ARCH	12000 mm x 100 mm	125.0	120.0
24. WOODEN ARCH	12500 mm x 100 mm	130.0	125.0
25. WOODEN ARCH	13000 mm x 100 mm	135.0	130.0

NOTES

1. ALL DIMENSIONS SHALL BE IN METERS.
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 सभी माप
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**SERVICE CONNECTIONS
 SINGLE PHASE
 INSULATED WIRE I**



REC
CONSTRUCTION STANDARD
H-2

EARTH TERMINAL DETAILS

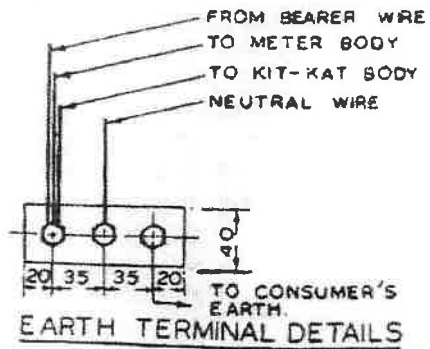
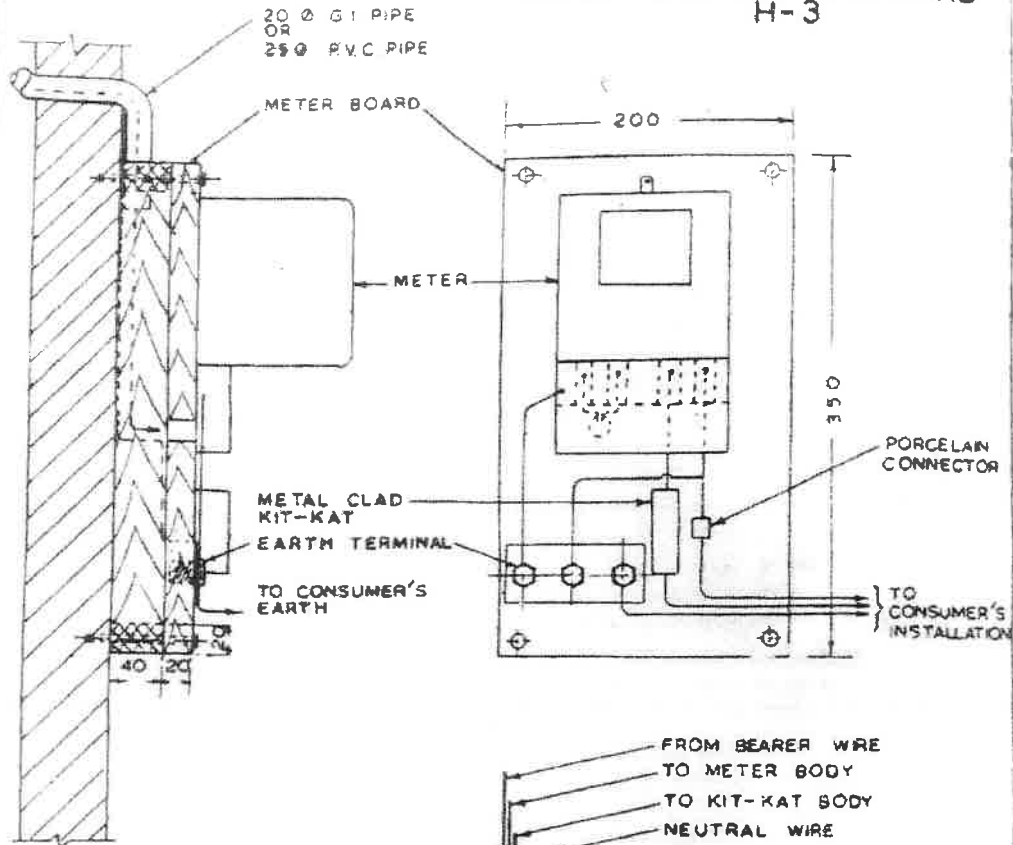
NOTE

1. METER BOARD CAN BE OF TEAK WOOD OR ANY SUITABLE HARD WOOD.

ALL DIMENSIONS IN MM.

**SERVICE CONNECTION
SINGLE PHASE
METER BOARD
(ALTERNATIVE - II)**
SCALE: - N.T.S. | MARCH - 1974.

REC CONSTRUCTION STANDARD H-3



NOTES:-

- 1 METER BOARD CAN BE OF TEAK WOOD OR ANY SUITABLE HARD WOOD
- 2 EARTH TERMINAL SHOULD BE MADE OF G.I STRIP 40X3 WITH 3 Nos. 12 Ø STUDS.

ALL DIMENSIONS IN MM.

**SERVICE CONNECTION
SINGLE PHASE
METER BOARD
(ALTERNATIVE - II)**

SCALE:- N.T.S. MARCH-1974