



Chhattisgarh State Renewable Energy Development Agency (CREDA) (Dept. of Energy, Govt. of Chhattisgarh)

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BID DOCUMENT No. 81323/CREDA/HOR/RE-V/ELECTRICAL MATERIAL AND EQUIPMENT/2021-22 DT. 27-08-2021

“TENDER FOR STANDARDIZATION OF RATES FOR SUPPLY OF VARIOUS ELECTRICAL MATERIALS(ACDB, DCDB, AJB, MJB, CONTROL PANEL USED IN MAINTENANCE OF SOLAR POWER PLANTS AND CABLES, PVC PIPES, SPD, MCB, HRC FUSE ETC USED IN PDN WORKS) AND ELECTRICAL EQUIPMENTS FOR OPERATION AND MAINTENANCE WORKS IN CREDA ANYWHERE IN THE STATE OF CHHATTISGARH”

Particulars	From Date & Time	To Date & Time	Place
Date of issue of notice inviting bid	07-09-2021 05:00 pm	----	----
Period of availability of bidding document at website	07-09-2021 05:00 pm	07-10-2021 05:00 pm	www.creda.co.in/Tenders
Submission of Pre Bid queries in writing	14-09-2021 11:00 am	14-09-2021 05:00 pm	At CREDA Conference Hall, CREDA HO, Raipur
Submission of Online Bid (Technical + e Price Bid)	07-09-2021 05:00 pm	07-10-2021 05:00 pm	https://eproc.cgstate.gov.in
Opening of Technical Bid	08-10-2021 11:00 am	08-10-2021 02:00 pm	At CREDA Conference Hall. CREDA HO, Raipur
Declaration of Eligible Bidders	After conclusion of Technical evaluation		At CREDA Conference Hall. CREDA HO, Raipur
Opening of e- Price Bid	After conclusion of Technical evaluation and declaration of eligible bidders		At CREDA Conference Hall. CREDA HO, Raipur

Bid Document Cost –Rs.5000.00 + 18% GST = Rs.5900.00/-(In words Rupees Five Thousand Nine Hundred Rupees Only) to be deposited in CREDA’s account along with EMD via RTGS/NEFT as a single transaction.

Document can be downloaded from our website www.creda.co.in or from Chhattisgarh e-Procurement portal i.e. <https://eproc.cgstate.gov.in>.

CHATTISGARH STATE RENEWABLE ENERGY DEVELOPMENT AGENCY

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NOTICE INVITING BID

CREDA invites sealed Bids for “standardization of rates for supply of various electrical materials(ACDB, DCDB, AJB, MJB, control panel used in maintenance of solar power plants and cables, PVC pipes, SPD, MCB,HRC fuse etc. used in PDN works) and electrical equipment for operation and maintenance works in CREDA anywhere in the state of Chhattisgarh” from registered PDN contractor/Vendor of Electrical and Electronics items of CREDA with 3 years track record in the field of PDN and O&M works, as per following details -

Sl.No.	Item Description	Approximate value of work	Cost of Bid Document fees and EMD	Essentials
1	“Standardization of rates for supply of various electrical materials(ACDB ,DCDB, AJB, MJB, control panel used in maintenance of solar power plants and cables, PVC pipes, SPD, MCB, HRC fuse etc used in PDN works) and electrical equipment for operation and maintenance works in CREDA anywhere in the state of Chhattisgarh”	Rs. 3.00 Crore	Rs. 5,000.00 (+18% GST) Rs.1,50,000.00/- = Rs.1,55,900.00/-	As per clause no. 1A to 1G of Eligibility Criteria (Page no. 7)
TOTAL		Rs. 3.00 Crore	Rs.1,55,900.00 /	----

The quantity of supply is not fixed. The allocation of order will depend on the availability of project to CREDA

Important Events and time schedule for this Bid are as follows –

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Technical Bid and Price Bid shall be submitted online only at <https://www.eproc.cgstate.gov.in>. Bidders are advised to follow the instructions provided for Registration and e-Submission Process accordingly. (For any query about e-bidding please visit user manual at <https://www.eproc.cgstate.gov.in>)

Details of this Bid are mentioned at Bid Documents which can be downloaded from our website www.creda.co.in. The Bidder should have to deposit Bid document cost along with EMD through NEFT/RTGS in the account of CREDA mentioned below.

Bidders are requested to submit Pre-Bid queries with their suggestions/objections/ reservations if any with details so as to avoid any confusion and to ensure clarity and transparency regarding the Bid.

CREDA reserves all rights to accept/reject any or all Bids in full/part without assigning any reasons. Any Amendments in the tender documents shall only be notified through the website of CREDA i.e. www.creda.co.in

**Chief Engineer
RE-V, H.O. CREDA
Raipur (CG)**

CHECK LIST OF DOCUMENTS TO BE UPLOADED IN THE E-BIDDING PORTAL

To ensure that your Bid uploaded on the Chhattisgarh e-Procurement portal i.e. <https://eproc.cgstate.gov.in> is complete in all respects, please go through the following checklist & tick mark for the enclosures attached with your Bid –

Sl. No.	Envelope	Description	Complied (For Office Use only)
1.	A. Pre-Qualification	EMD + Tender Document Fee submission form of the bidder confirmed by CREDA (as on page – 5)	
2.		Self-Attested Undertaking of the Bidder as mentioned on Page – 6 of the tender document	
3.		Copy of original tender document duly signed & with stamp on each page, as a confirmation of acceptance of the Terms & Conditions (T&C).	
4.		PAN, GSTIN issued in the name of the bidder	
5.		Self-certificate from Bidder on not being a debarred from Government contract or a blacklisted company.	
6.		Declaration of conflict of interest - by bidder about any relatives working with CREDA and Affidavit as per Annexure - 03	
7.		Copy of Registration: Certificate (or Acknowledgment) as vendor of as PDN contractor/Vendor of electrical and electronics items of CREDA for PDN Works valid for FY 2021-22.	
8.	B. Technical and Financial Qualification	Copy of Test reports of cables and other necessary items mentioned in the tender.	
9.		Original Net Worth Certificate duly signed by Chartered Accountant.	
10.		Copy of Turnover Certificate for last three years of works done regarding SPV PDN works, Fabrication works, Electrical material supply work.	
11.		Copy of ITRs and audited balance sheet for last three Financial Years of the Bidder	
12.		Completion and Performance Certificates of PDN Works, Electric material, Equipment Supply work in the name Bidder in Govt. Scheme of CREDA.	
13.		Proof of being Eligible Manufacturer of standard items mentioned in the tender, if serial no. 14 is not applicable	
14.		Manufacture Authorization certificates of standard items mentioned in the tender (mandatory in case of authorised dealer/distributor)	
15.		Undertaking on indigenouseness of components.	
16.		Undertaking for the remaining test reports (for which acknowledgements have been submitted) submission within 90 days from the date of agreement.	
17.		Schedule - I Part-A (on page - 45 of bid document)	
18.		Schedule - II Part-B (on page - 46 of bid document)	
19.		Schedule - III Part-C (on page - 47 of bid document)	

Details of EMD and Tender Document Fee

A scanned copy of the EMD and Bid Document fee transaction shall have to be uploaded in the format below on the Chhattisgarh e-Procurement portal. Details uploaded in incorrect format shall be rejected.

Tender No. and Date	
Name of the Bidder	
Bidder's Bank Account Details	
(i) Name of the bank	
(ii) Branch	
(iii) IFS Code	
(iv) Account No.	
(v) Transaction reference number	
(vi) Date of transaction	
(vii) EMD + Bid Document Fee	Rs. 1,55,900/- (Rs. 1,50,000 + Rs. 5,900)

Name of A/c	CREDA
Bank & Branch Name	ICICI Bank, Panchpedi Naka, Raipur
Bank Account Number	134601000400
Branch IFSC Code	ICIC0001346

(Sign & Seal of the bidder)

***NOTE –**

1. The EMD and the Tender Document Fee shall have to be deposited as a single NEFT/RTGS transaction in CREDA's bank account (amount mentioned above).
2. Bidders those who have valid MSME Competency Certificate and are registered in Chhattisgarh State are exempted from submitting the EMD amount mentioned above. They have to only pay the bid document fees

UNDERTAKING OF THE BIDDER

I/We have read carefully and examined the notice inviting Bid, schedule, General Rules and terms and conditions of the contract, special conditions, Schedule of Rates and other documents and Rules referred to in the Bid document for the supply.

I/We hereby Bid my rates for the execution of the work for CREDA as specified within the time stipulated in the schedule in accordance with all aspects with the specifications, designs, drawings and instructions with such conditions so far as applicable.

I/We agree to keep the Bid valid for **One Hundred Eighty (180) days** from the due date of submission thereof and not to make any modifications in its terms and conditions.

A sum of **Rs.....** is hereby forwarded as **Earnest Money** in the form of crossed demand draft / RTGS / NEFT payable to CREDA at Raipur (C.G.). If I/We, fail to commence or complete the Work Ordered in specified time or fail to fulfil the any condition of Bid document, I/We agree that the CREDA shall, without prejudice to any other right or remedy, be at liberty to forfeit the said Earnest Money absolutely. The said Earnest Money shall be retained by CREDA towards security deposit to execute all the works referred to in the Bid documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be required by CREDA.

I/We hereby declare that I/We shall treat the Bid documents, specifications and other records connected with the work as secret/confidential and shall not communicate information derived there from to any person other than a person to whom I/We have authorized to communicate the same or use the information in any manner prejudicial to the safety of CREDA/Government.

I/We shall abide to all the laws and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.

Our GST Registration No. The PAN No. under the Income Tax Act is

I/We shall be responsible for the payment of the respective taxes to the appropriate authorities and should I/we fail to do so, I/we hereby authorize CREDA to recover the taxes due from us and deposit the same with the appropriate authorities on their demand.

I/We hereby state that we have provided information of our near relatives as stated in the affidavit attached at “Annexure – 03”

Dated:

Signature

Place:

Name of Bidder with seal.....

Witness:

Signature:

Name:

Postal Address:

.....

SECTION - 1

INSTRUCTIONS FOR BIDDERS

1. ELIGIBILITY CRITERIA :

A. MINIMUM EXPERIENCE

Bidders must have minimum experience in three financial years i.e. 2018-19 & 2019-20, 2020-21 as per the details mentioned below –

SN	Details of work experience	Experience
1	Supply and installation of various fabrication items used in PDN works, PDN Civil works, miscellaneous electrical items/equipment for operation and maintenance in CREDA anywhere in the state of Chhattisgarh”	Minimum 03 years’ experience in PDN and O&M related works in CREDA

- B.** Bidders will have to submit satisfactory commissioning/functioning report containing complete details from the concerned state/central agencies /department along with bid document. Experience Certificates submitted should be in attached format (as per **Annexure-02**) or **Other Format containing similar information as in attached format (Annexure-02)** shall be considered only in-case of submitted in Hindi / English Language only. Work order, L.O.I. / L.O.A etc., will not be acceptable.
- C.** Bidders must have a Positive Net worth of Rs. **25 Lacs** as on **31st March 2020 (which is defined as “Net value of the Assets minus (-) Net value of liabilities”)**. They shall have to submit an **Original Certificate** duly signed by a qualified and registered Chartered Accountant having UDI number as a proof. Produced certificate must tally with the audited balance sheet.
- D.** Bidders should have an aggregate turnover of minimum **3 Crores** in three years i.e. 2017-18, 2018-19&2019-20 in SPV PDN works, Fabrication works, Electrical material supply work. Certified copies of the annual returns and audited balance sheet submitted to the Registrar of Companies/ Income Tax Authorities should be enclosed. For the preceding years an **Original Summarised Sheet** of turnover certified by registered CA must be enclosed.
- E.** Bidder who is debarred from business by Govt. /Govt. Agency in any state would not be eligible to participate in this bid. A self-declaration should be submitted by the bidder to this effect, failing which bid shall be rejected.
- F.** The Bidder shall be the original manufacturer of items. In case any dealer or distributor of any company then the bidder shall have to submit the certificate of authorisation/Dealership certificate from the concerned company.
- G. Additional Eligibility Criteria-** Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:
- Made misleading or false representations in the forms, statements, affidavits and attachments submitted in proof of the qualification requirements; and/or
 - Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion litigation history, or financial failures etc. and/or
 - Participated in the previous bidding for the same work and had quoted unreasonably high or low bid prices and could not furnish rational justification for it to CREDA.

- 2.** Bidders should inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A Bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent upon any misunderstanding or otherwise shall be allowed. The Bidder shall be responsible for arranging and maintaining all materials at his own cost, tools & plants, water electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read all the terms and conditions of the tender and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc.(including the local taxes, duties, levies and other obligations as

may be enforceable from time to time) will be issued to him by the government and local conditions and other factors having a bearing on the execution of the work.

3. CONSORTIUM-Consortium of bidders shall not be allowed in this bid.

4. START-UP AND NEW ENTREPRENEUR – Start-ups and New Entrepreneurs shall not be allowed in this bid.

5. BIDDING PROCESS -

For ease of accessing the e-bidding website and registration the following is to be done by bidder -

- A. Visit <https://eproc.cgstate.gov.in>
- B. **Prospective bidders are requested to download, read and understand the Manuals present on the website so as to clearly understand the bid submission process.**
- C. The user will be directed to e-bidding page where all information regarding registration is available along with helpline details.
- D. Technical bid and Price Bid shall be submitted online only at <https://eproc.cgstate.gov.in> latest by **05.00 PM on 07-10-2021**. Bids submitted after scheduled time and date shall not be considered.

6. EMD AND TENDER DOCUMENT FEE-

The EMD and tender Document Fee shall have to be paid via RTGS/NEFT to CREDA's Account mentioned below as a single transaction.

Name of the A/c	CREDA
Bank & Branch Name	ICICI Bank, Panchpedi Naka, Raipur
Bank Account Number	134601000400
Branch IFSC Code	ICIC0001346

7. SUBMISSION OF DOCUMENTS -

All the documents including technical and financial Bid should be submitted online on Chhattisgarh e-Procurement portal <https://eproc.cgstate.gov.in> as per the items mentioned in the Checklist on page no. 4 in this bid. Bidders are advised to finish all the bidding portal related activities such as registration, USB certificate/token approval, payments etc. so as to avoid last minute difficulties during the bid submission. Bidders are also advised to make themselves fully aware with the bid submission mechanism to avoid last minute hassles and doubts during bid submission. CREDA shall only entertain genuine technical issues/glitches, provided that the bidder submits evidence regarding the same.

8. SPECIFICATION AMENDMENTS -

The Specifications of items should be as per the same mentioned in the bid. If any amendments are issued by CREDA in due course of time, in this context, then those shall be applicable under this bid.

9. GST & PAN -

Bidder shall have to submit copies of GST registration number and PAN numbers issued by the appropriate authority.

10. THE BID -

The Pre-Qualification, Technical-Financial Qualification Documents and Price Bid, other related documents must be uploaded in the portal i.e. <https://eproc.cgstate.gov.in> **from 05:00 PM 07-09-2021 to 05:00 PM dated 07-10-2021**. Nobody is authorized to receive or grant receipt for Bid delivered on behalf of CREDA. **Bid received through any other means shall not be considered and shall be rejected.**

11. ANALYSIS OF RATE -

- A. Bidder should quote their rates considering variation of site conditions and all other factors in price of different components and keeping the quantum and quality of work in mind. Benchmark cost is attached here with Annexure-IV.
- B. Bidder shall have to ensure that the rates quoted are not lower than 90% of the benchmark cost as attached in this bid in Annexure IV, rate(s) quoted below 90% of the benchmark cost shall be considered as unbalanced rate.
- C. If the successful bid is unbalanced in relation to the benchmark cost as stated in Annexure-IV by more than 10%, then the successful bidder shall have to provide Additional Performance Security (APS) to the extent of difference of the threshold cost (mentioned in point 'B') above and rates quoted by the successful bidder for total allocable quantity in such categories in which he has submitted unbalanced bid, in the form of Demand Draft/RTGS issued by approved scheduled bank in favour of CREDA.
- D. The Additional Performance Security (APS) shall be retained by CREDA and the same shall be returned after successful Completion of allocated work. Those other bidders, who accept the L1 Rates, are also required to submit Additional performance security for allocated work.
- E. Selection of L-1 Rates: - The Successful bidder who found to be L1 (as manner described in this tender document, Clause no. – 33 of Section-II), shall be offered allocated quantity of electrical items (as described in this tender document, Clause no.-33 of Section-II). L1 bidder shall have to accept the offer of CREDA within 10 days along with laid down “ADDITIONAL PERFORMANCE SECURITY”, this APS amount of complete allocated quantity shall be submitted at the time of Agreement. The amount of APS will be communicated to L1 bidder along with acceptance letter. Highly unbalanced rate shall not be considered while deciding final approved rates.
- F. If L1 bidder refuses to accept the offer and to deposit intended APS within the prescribed time, then his bid will be rejected by sanctioning authority and earnest money shall be forfeited and blacklisted for 2 years and debarred to participate in any tender and any activity of CREDA till further orders.
- G. In case L1 bidder accept the offer and deposit the APS, L1 rates of the electrical items will be fixed for rest of the successful bidders. Now other bidder shall be offered rest quantity of pumps (as prescribed in this tender document, Clause No. - 33 of Section-II).
- H. In case, L1 bidder refuses to accept the offer and doesn't deposit the prescribed APS, offer letter shall be sent to the L2 bidder on L2 rates. Same process shall be repeated till the final rates are fixed.
- I. By the process mentioned above the final rates will be fixed and shall be offered to other successful bidders.
- J. The APS shall be submitted by other successful bidder before sanction of allocated electrical items in the supply work.
- K. If the bidder fails to complete the work or left the work incomplete, this Additional Performance Security (APS), S.D. and EMD shall be forfeited by the CREDA, the agreement shall be terminated and bidder shall be blacklisted and debarred to participate in any tender and any activity of CREDA till further orders.

11. REGISTRATION OF BIDDER –

The bidder shall have to be registered as PDN contractor/Vendor of electrical and electronics, equipment items in CREDA for FY 2021-22 before signing of agreement.

12. VALIDITY -

Full descriptive particulars and complete specifications should accompany the offer. Offers should be kept open for acceptance for at least **180 days** from the date of opening. After finalization of this Bid the approved rates shall be valid till one year from the date of finalisation; however CREDA shall have liberty to increase or decrease this validity if needed.

13. TERMS & CONDITIONS -

- A.** The terms, conditions and specifications mentioned in Bid document shall be binding on the Bidders and no condition or stipulation contrary to the conditions shall be acceptable. It may please be noted that the Bidders who do not accept terms and conditions stipulated in this Bid documents, their offers shall be liable to be rejected out-rightly without assigning any reason whatsoever.
- B.** Each page of Bid document & enclosures shall be signed by the Bidder and seal affixed. All the pages of the documents issued must be submitted along with the technical offer. In case of any corrections / alterations in the Bid, the Bidder should attest the same; otherwise Bids may not be considered.
- C.** Bidders are also instructed to submit their Bids in properly arranged manner (with index, proper paging and with flags on important documents). Incomplete, lose, conditional or improper arranged Bids will not be accepted.

14. CREDA RESERVES THE RIGHT -

- (i)** To reject or accept any or all Bids fully or partly without assigning any reason on the grounds considered advantageous to CREDA, whether it is the lowest Bid or not.
- (ii)** To split the quantities against the Bid further for the same items/work. No reason will be assigned by CREDA for this and will be binding on the Bidders.
- (iii)** To increase or decrease of aggregate quantities up to 100 % as per discretion or circumstances.
- (iv)** Due to large quantum of supply& limitation of the time period for completion of the supply/works CREDA may take consent from other Bidders if they agree to work on rates standardized by CREDA.
- (v)** CREDA may undergo agreement with those eligible Bidders who give consent to work on rates standardized by CREDA and may allocate work to them. Rates approved through this Bid may be standardized for all eligible Bids to work in **year 2021-22 & 2022-23** and shall be valid till **31-03-2023**. However CREDA reserves right to curtail or extend this period.

15. COMMUNICATIONS -

- i.** All the communication between Bidder and CREDA shall be in writing. Notice sent by Fax or other Electronic means shall be effective on confirmation of the transmission. Notice sent by registered post or speed post shall be effective of delivery or at expiry of normal delivery period as under taken by Postal Service.
- ii.** Offers through Telegraph/Fax/Emails/Post/Courier or open offers etc. received shall be summarily rejected.

16. BID DOCUMENT FEE AND EARNEST MONEY-

- a.** Each Bidder should submit Bid Document Fee and earnest money in the form of RTGS/NEFT as mentioned in the NIT vide **81323/CREDA/HOR/RE-V/Electrical Materials/2021-22 DT. 27-08-2021**, as prescribed at **page 05**, else they will summarily be rejected and returned. Bid Document Fee & EMD submitted in any other form e.g. **Cash/Bank Guarantee/FDR /TDR etc. shall not be accepted.**
- b.** MSME unit registered for manufacturing or service of PDN/electrical/electronic items or its components in Chhattisgarh state and public sectors of government are exempted from EMD subjected to submission of valid document i.e. Production competency certificate.

17. PRE-BID QUIRES SUBMISSION IN WRITING -

- i.** Pre-bid queries are required to be submitted on **14-09-2021 up to 5:00 PM** at CREDA HO Raipur to clarify doubts so that all doubts and confusions are resolved before the submission of Bid.
- ii.** All suggestions, doubts, confusion, request, queries etc., shall have to be presented to CREDA **in writing** on or before **14-09-2021 till 5:00 PM**. After that any representation in this regard shall not be considered.

- iii. The purpose of pre-bid queries is to clarify issues and to answer questions in any matter that can be raised at that stage. The responses against queries if required will be uploaded on website of CREDA and the e-bidding portal for information of bidders. Any modification of the bidding document which may become necessary as a result of pre-bid queries shall be part of original Bid document and communicated through corrigendum uploaded on www.creda.co.in and <https://eproc.cgstate.gov.in>.

18. TECHNICAL CRITERIA -

Bidder shall have to give a self-declaration that all the Electrical, Electronics and PDN items are conforming to the latest ISI standards and IEC standards/BIS standards.

19. FORFEITURE OF EARNEST MONEY DEPOSIT -

It should be clearly understood that in the event of Bidder failing to enter into the agreement in the prescribed format on their quoted rates and also fails to execute assigned works under any Scheme of CREDA, within stipulated time, if he is so communicated within the validity period of the offer, the full amount of earnest money will be forfeited and Bidder shall be debarred from future business with CREDA. CREDA's decision in this regard will be final and binding on the Bidders.

20. PRICE OF SUPPLY OF INVERTER/PCU -

- I. The Price quoted for all items/work must be with one year warranty. The GST shall be paid extra as per prevailing rate. The prices shall be filled exactly as per **Price Bid enclosed**.
- II. Any change in GST shall be become applicable during the period of contract.

21. ENGINEERING DOCUMENT -

Bidders will have to submit Engineering Documents with technical details, Specifications of components and make etc. to CREDA for approval, as and when asked by CREDA. Supply/work may only be started out only after approval of the Engineering Document/Drawing.

22. INSPECTIONS -

CREDA reserves right to inspect the material at Godowns /Temporary Stores before dispatch and also at works sites.

23. TAX OBLIGATIONS -

CREDA shall deduct TDS for Income Tax, applicable cess on Civil Work etc. under various acts and deposited with the appropriate authority. Costs and taxes before execution of agreement with CREDA so as to ensure tax deposition as per Government Rules accordingly.

24. JURISDICTION OF THE COURT –

Any dispute arising out of the contract shall be subject to the jurisdiction of Hon'ble High Court of Chhattisgarh.

25. CORRUPT OR FRAUDULENT PRACTICES -

- i. CREDA requires the bidder to strictly observe the laws against fraud and corruption in force in India, namely, Prevention of Corruption Act, 1988.
- ii. It is required that each bidder (including their respective officers, employees and sub-contractors) adhere to the highest ethical standards, and report to the Government/ Department all suspected acts of fraud or corruption or coercion or collusion of which it has knowledge or become aware, during the tendering process and throughout the negotiation or award of contract.

SECTION - 2

GENERAL CONDITIONS OF CONTRACT

1. DEFINITIONS -

In writing General Conditions of Contract, the specifications and bill of quantity, the following words shall have the meanings hereby indicated, unless there is something in the subject matter or content inconsistent with the subject.

- CREDA shall mean the Chhattisgarh State Renewable Energy Development Agency represented through the Chief Engineer.
- Work shall mean any work entrusted to the Bidder as mentioned in the scope of work and Work Order.
- The "Engineer in charge" shall mean the Engineer or Engineers authorized by CREDA for the purpose of this contract. Inspecting Authority shall mean any Engineering person or personnel authorized by CREDA to supervise and inspect the project.
- "The Eligible SI/Bidder" shall mean the Bidder awarded with the contract or their successors and permitted assigns. Contract Price shall mean the sum named in or calculated in accordance with the provisions of the contract as the contract price. General Conditions shall mean the General conditions of Contract.
- "Specifications" shall mean the specifications annexed to these General Conditions of contract and shall include the schedules and drawings attached thereto or issued to the eligible bidder from time to time, as well as all samples and pattern, if any,
- "Month" shall mean calendar month. "Writing" shall include any manuscript, typewritten, printed or other statement reproduced in any visible form whether under seal or written by hand.

2. PROOF OF MANUFACTURER -

Those bidders who are also manufacturers of an important component of fabrication, electronic, electrical items shall have to submit proof of their factory, SSI Registration and list of Machineries and Equipment's.

3. CONTRACT DOCUMENT -

The term "Contract" shall mean and include the General conditions, specifications, schedules, drawings and Work Orders etc., issued against the contract schedule of price or their final general conditions, any special conditions applying to the particular contract specification and drawings and agreement to be entered into. Terms and conditions not herein defined shall have the same meaning as are assigned to them in the Indian contract Act or any other Act in vogue or by any person of common knowledge and prudence.

4. MANNER OF EXECUTION -

Execution of work shall be carried out under Government Mode Scheme of CREDA in an approved manner as outlined in the technical specifications or where not outlined, in accordance with desired Specifications laid down by CREDA, to the reasonable satisfaction of the Engineer.

5. VARIATIONS, ADDITIONS & OMISSIONS -

CREDA shall have the right to alter, amend, omit, split or otherwise vary the quantum of work, by notice in writing to the Bidder. The eligible Bidder shall carry out such variation in accordance with the rates specified in the contract so far as they may apply and where such rates are not available; those will be mutually agreed between CREDA and the eligible Bidder.

6. INSPECTION -

- A. The Engineer-in-Charge or his authorized representative(s) shall be entitled at all reasonable times to inspect and supervise and test during supply and commissioning. Such inspection will not relieve the eligible bidder from their obligations under this contract.

- B.** Material can be inspected before dispatch or in transit by the authorized representatives of CREDA at the factory / godown at the cost of the eligible bidder, if desired by CREDA.
- C.** CREDA will undertake real time performance and quality test of randomly selected items and its components during the course of execution as per the specifications and guidelines laid by CREDA to ensure quality items/work.

7. COMPLETION OF WORK -

Time being the essence of contract, the supply of the Items/work shall be completed within the time schedule prescribed in the Work Order.

8. ELIGIBLE BIDDER'S DEFAULT LIABILITY -

CREDA may by written notice of default to the eligible bidder, terminate the contract in circumstances detailed hereunder -

- (a)** If in the opinion of the CREDA, the eligible bidder fails to complete the supply/work within the time specified in the supply/work Order or within the period for which extension has been granted by CREDA to the eligible bidder.
- (b)** If in the opinion of CREDA, the eligible bidder fails to comply with any of the provisions of this contract.
- (c)** In the event of CREDA terminating the contract in whole or in part as provided in paragraph (a) above, CREDA reserves the right to engage another eligible bidder or agency upon such terms and in such a manner as it may deem appropriate and the eligible bidder shall be liable to CREDA for any additional costs or any losses caused to CREDA as may be required for the supply of the Items and or for penalty as defined under this Bid document until such reasonable time as may be required for the final completion of the work.
- (d)** In the event CREDA does not terminate the contract as provided in paragraph (a) the eligible bidder shall continue performance of the contract, in which case he shall be liable to CREDA for penalty for delay as set out in this Bid document until the work is completed.

9. FORCE MAJEURE -

The eligible bidder shall not be liable for any penalty for delay or for failure to perform the contract for reasons of FORCE MAJEURE such as of God, acts of public, enemy, LWE problems, acts of government, cyclone, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes provided that if bidder shall submit delay notice with appropriate cause of delay to the CREDA in writing within **15 days** of force majeure. CREDA shall verify the facts and may grant such extension as facts justify. Delay in supply of any accessories of items etc. by the related vendors, to whom the Bidder has placed order, shall also not be treated as force majeure.

10. REJECTION OF WORKS -

In the event of any of the material supplied/work done by the eligible bidder is found defective in material or workman ship or otherwise not in conformity with the requirements of this contract specifications, CREDA shall either reject the material and/or work and advise the eligible bidder to rectify the same. **CREDA may impose penalty for such rejection up to the 200% cost of the entire item/work. Habitual/repeated offenders shall be black listed/debarred to participate in the any Bid/ Activity of CREDA till further orders.** The eligible bidder on receipt of such notices shall rectify or replace the defective material and rectify the work free of cost. If the eligible bidder fails to do so CREDA may -

- a)** At its option replace or rectify such defective materials and/or work and recover the extra cost so involved from the eligible bidder plus **15%** service charges of the cost of such rectification, from the eligible bidder and/ or terminate the contract for balance work/ supplies with enforcement of penalty **as stated above.**
- b)** Defective materials/workmanship will not be accepted under any conditions and shall be rejected outright without compensation. The eligible bidder shall be liable for any loss/damage sustained by CREDA due to defective work **with enforcement of penalty as stated above.**

11. EXTENSION OF THE TIME -

If the completion of supply is delayed due to any reason beyond the control of the eligible bidder, the eligible bidder shall without delay give notice to the CREDA in writing of his claim for an extension of time. CREDA on receipt of such notice may or may not agree to extend the contract/delivery/completion date of the items/works as may be reasonable but without prejudice to other terms and conditions of the contract.

12. MAKES OF EQUIPMENTS TO BE USED IN THE WORK -

- (I) The items shall be made in India.
- (II) The eligible bidder has to ensure that equipment's as per Technical Requirements of guidelines of CREDA as complied with. The material/works for which CREDA/MNRE or BIS/IEC or ISI specification is not available, engineer-in-charge of the works will examine and approve the material/works, preferably of all makes on which CREDA has report of satisfactory performance. Test certificates for items should be submitted to the engineer-in-charge of the works before installation of the same.
- (III) Successful bidder upon issue of LOI must submit Manufacture Authorization Form (MAF) from manufacture of electrical and electronics items/equipment which he is going to supply, **no payment shall be made if he fails to do so.**
- (IV) Eligible bidder should submit warrantee Agreement for one **year** for Items with manufacturer or distributors certified by the manufacturer before supply of items and execution of works, for any manufacturing defects or bad workmanship.

13. WARRANTEE PERIOD AND POST SUPPLY SERVICES -

- A. The work done/material supplied by the eligible bidder should be warranted for satisfactory operation and against any defect in material and workmanship including items and other balance of equipment's, for a period of **1(one) years**, from the date of supply/completion of the items/work.
- B. The above warrantee certificates shall be furnished to the CREDA for approval. Any defect noticed during this period should be rectified by the supplier free of cost upon written notice from CREDA provided such defects may be due to bad workmanship or bad materials used.
- C. The warrantee period shall be extended by the period during which the items/work remains non-operative due to reasons within control of the eligible bidders.
- D. This warrantee must be an unconditional onsite warrantee and the eligible bidder will have to replace the defective material within **7 days** positively from the date of information given to him.
- E. Care should necessarily be taken to make the items operational, once the reporting of the fault/non-operational status is done, within a week. If the items is not made operational within **7 days** CREDA may rectify the same at the cost of bidder and the warrantee period shall be extended for a month for the same.
- F. Eligible Bidder shall have to establish their service stations in headquarter and shall have to keep sufficient quantity of spares and man power to ensure proper service network for taking care of smooth functioning of items supplied by them. Eligible bidder shall have to give a toll free number to register complaints.

14. TERMS OF PAYMENT -

The following terms of payment shall apply for the Bid -

- A. **97%** of the eligible payment as per the supply/work Order after satisfactory supply and performance testing of the works at site with proper handing over.
- B. Balance **3%** of the eligible payment (Without GST) shall be retained by CREDA as Performance Security for a period of **12 months**.

15. PENALTY FOR DELAY IN COMPLETION OF CONTRACT -

If the eligible bidder fails to complete the assigned work within the schedule time specified in the sanction order or any extension granted there to,

CREDA will recover from the bidder as penalty a sum of half percent (0.5%) of the system price excluding GST/Tax for every delayed system per week. For this purpose, the date of taking over shall be reckoned as the date of completion. The total penalty shall not exceed 5% (Five Percent) of the cost.

However, imposition of such penalty shall be discretion of CREDA. This penalty may be decrease, increase or waved off due to various justified reasons on ground with recommendations of field staff on record. Period declared as lockdown or local quarantine /containment zones due to Covid-19 pandemic shall be waived off for the purpose of penalty.

Review of the progress of supply of the electrical items allocated to bidders shall be done time to time by CREDA and if the progress of supply of electrical items is found unsatisfactory, the allocation of entire remaining supply or their part of can be re-allocated to other bidders as per discretion of CREDA.

16. SECURITY DEPOSIT (SD) -

- A.** The Earnest Money shall be retained by CREDA for a period up to which the tender/RC is live.
- B.** Beside this, **3%** of the cost shall also be retained as SD during the period of warrantee. No interest shall be payable on the Security Deposit.
- C.** Period for which EMD and SD are to be retained may be extended in case the warrantee period is extended due to fault in the material supplied.

17. INSURANCE -

- A.** The eligible bidder shall arrange insurance coverage for the materials at his/ beneficiary's custody for the work under execution and successful commissioning and subsequent handover to the beneficiary. The eligible bidder shall take up insurance or such other measures for the manpower so as to cover the claim for damage / accident under workmen's compensation Act and other applicable State/Central laws. CREDA shall not bear any responsibility on this account.
- B.** Eligible bidder shall arrange for insurance coverage for complete material supplied during warrantee period from the date of supply/work. Insurance should cover for damage and theft. In case of such incidence, bidder must replace the lost/damaged part within **7 days** from the date of intimation.

18. PENALTY DUE FROM THE ELIGIBLE BIDDER -

All costs of damages and delays for which the eligible bidder is liable to the CREDA will be deducted from any money due to the eligible bidder including the security deposit of any project under CREDA.

19. ELIGIBLE BIDDER'S RESPONSIBILITY -

Notwithstanding anything mentioned in the specifications of subsequent approval or acceptance of the items by CREDA, if any, the ultimate responsibility for satisfactory performance of the entrusted work shall rest with the eligible bidders. If in any case the eligible bidder does not complete the Supply/work as per the supply/work Orders issued to them then CREDA may take over the task & complete the project at the risk and cost of eligible bidder.

20. RESPONSIBILITY TO RECTIFY THE LOSS AND DAMAGE -

If any loss or damage occurs to the work or any part thereof or materials/plant/equipment's for incorporation therein the period for which the eligible bidder is responsible for the cause thereof or from any cause whatsoever, the eligible bidder shall at his own cost rectify/replace such loss or damage, so that the permanent work confirms in every respect with the provision of the contract to the satisfaction of the Engineer. The eligible bidder shall also be liable for any loss or damage to the work/equipment's occasioned by him in course of any operation carried out to him during performing the contract.

21. RESPONSIBILITY TOWARDS THE WORKMAN OR OUTSIDERS –

- A.** The eligible bidder shall have to take insurance coverage from any authorized Insurance Company against Workmen compensation due under Workmen Compensation Act and submit copy of the insurance document before issuance of Work Order.
- B.** The eligible bidder shall ensure all safety measures during execution and repairs of the work. CREDA, will, in no case be responsible for any accident fatal or non-fatal, caused to any workman or outsider in course of transport or execution or repairs of work.
- C.** All the expenditure including treatment or compensation will be entirely borne by the eligible bidders. The eligible bidder shall also be responsible for any claims of the workers including, labour payments PF, Accidental Insurance, Gratuity, ESI & other legal obligations.
- D.** CREDA shall have all rights to deduct such claims of payments from bidder in case of complaints of such violations.

22. NON-ASSIGNMENTS -

The eligible bidder shall not assign or transfer the supply/work orders issued as per this contract or any part thereof without the prior approval of CREDA.

if eligible bidder transfer/assigned/sublet full or any part of work allocated to him without prior permission from CREDA in writing to any third party shall be liable to debar/black listed from any Bid/Activity of CREDA till further orders.

23. CERTIFICATES NOT TO AFFECT RIGHTS OF CREDA -

The issuance of any certificate by CREDA or any extension of time granted by CREDA shall not prejudice the rights of CREDA in terms of the contract nor shall they relieve the eligible bidder of his obligations for due performance of the contract.

24. SETTLEMENT OF DISPUTES THROUGH ARBITRATION -

- A.** Except as otherwise specifically provided in the contract, all disputes concerning questions of fact arising under the contract shall be decided by the Chief Executive Officer (CEO), CREDA provided a written appeal by the eligible bidder is made to CREDA. The decision of the CEO, CREDA shall be final and binding to the all concerns.
- B.** Any dispute or difference including those considered as such by only of the parties arising out of or in connection with the contract shall be to the extent possible be settled amicably between the parties. If amicable settlement cannot be reached then all disputed issues shall be settled by arbitration.

25. LAWS GOVERNING CONTRACT -

The contract shall be constituted according to and subject to the Laws of India and jurisdiction of the High Court of Bilaspur, Chhattisgarh.

26. LANGUAGE AND MEASURES -

All documents pertaining to the Contract including specifications, schedules, notice correspondences, operating and maintenance instructions, drawings or any other writings shall be written in English / Hindi language. The metric system of measurement shall be used in this contract.

27. CORRESPONDENCE -

- A.** Any notice to the eligible bidder under the terms of the contract shall be served by registered mail to the registered office of the eligible bidder or by hand to the authorized local representative of the eligible bidder and copy by post to the eligible bidder's principal place of business.
- B.** Any notice to CREDA shall be served to the Chief Engineer, CREDA Raipur in the same manner.

28. SECRECY -

The eligible bidder shall treat the details of the specifications and other documents as private

and confidential and they shall not be reproduced without written authorization from CREDA.

29. AGREEMENT -

The successful eligible bidder shall have to enter into an agreement with the CREDA in the approved contract agreement form within **10 days** of the receipt of call from CREDA.

30. DECLARATION OF CONFLICT OF INTEREST –

- A.** The bidder shall not be permitted to Bid for the work if the section of HO CREDA (responsible for implementation of work) in which his near relative is posted. Furthermore Successful Bidder shall not be given work in the district in which his near relative is posted. Bidder Shall also intimate the names of his near relatives working in the CREDA. Bidder shall also intimate the name of persons who are working with him in any capacity and who are near relatives to any employee in CREDA. Any breach of this condition by bidder would render himself liable to be blacklisted for three years and removed from approved list of bidder.

Note:- By the term near relatives is meant Wife, Husband, Parents and son , Brother, Sister, Brother-in-law, Father-in-law, Mother-in-law etc.

- B.** Bidder must produce an affidavit (Annexure-03) stating the names of retired/removed employee of CREDA (if any) in his employment who retired /removed within last two years, if in case there is no such person in his employment, his affidavit should clearly state this fact. This affidavit is mandatory, if it is not produced along with the bid, the bid shall be rejected.

31. BID EVALUATION CRITERIA -

- A.** Offers of only those parties, who are found qualified based on Eligibility Criteria and Techno-commercial Bid, will be taken into further consideration and financial bid of only those parties who are qualifying the criteria of Techno-commercial Bid will be opened.
- B.** Other things being equal, the lowest rates shall normally be preferred, but CREDA shall have rights and liberty to amend/lower the rates.
- C. Conditional Bids shall not be accepted.**
- D.** However CREDA shall have rights and liberty to call any /other parties to work on approved rates as and when requires in accordance with quantum of work and scheduled time limits for completion of targets.

32. EVALUATION OF PRICE BID -

Price bid shall be evaluated on the basis of Quoted rates. Lowest rates of each category of Items/works shall be considered however CREDA shall have discretionary power to amend/lower the rates.

33. ALLOCATION OF TARGETS AND AREA OF WORK -

The supply shall preferably allotted to eligible bidders on L-1 rates subjected to rate reasonability however the CREDA has sole discretionary power to award work to any other eligible bidder on L-1 rates if he agreed to supply/work on L-1 rates. The allocation of work will be based on the project, work and demand received from field offices of CREDA.

34. BID REJECTION -

If financial bid of a bidder has been opened on the basis of technical bid of a bidder which has been determined to be substantially responsive to the bidding document and in latter stage it is found that bidder does not meet the eligibility criteria or the technical bid is found substantially non-responsive, CREDA reserves rights to reject such bid of a bidder any time.

We (on behalf of Eligible Bidder) have read all the above stated details & accept to comply with it in total

(Name, Signature & Seal of the bidder)

SECTION-3

TECHNICAL SPECIFICATION

1. TECHNICAL SPECIFICATION OF ACDB, DCDB, AJB, MJB, CONTROL PANEL

1.1 AC DISTRIBUTION BOARD (ACDB):

This shall consist of box of suitable powder coated metal casting. One feeder per phase shall be provided in ACDB with MCB of suitable capacity installed at each feeder in the ACDB. One Electronic Energy Meter, ISI make, Single / Three Phase, of good quality shall also be installed in ACDB suitable placed to measure the consumption of power from SPV Power Plant. Proper rating MCB shall be installed at every feeder (in case of single phase output also, there shall be three feeders) to protect feeders from the short circuit current as per the requirement of the site & instructions of CREDA. A separate dedicated feeder from conventional/grid line to PCU as well as ACDB should also be installed, as per CREDA's instruction. A separate change over switch of proper rating should also be suitably installed in the ACDB to isolate the existing connected load from the Solar System & cater the power to the existing load from conventional power (Grid), in case of emergency. A SPD must be provided in the ACDB to protect the system from the surge.

1.2 DC DISTRIBUTION BOARD (DCDB):

This shall consist of suitable powder coated metal casting. In this box a separate arrangement which shall consist of MCCBs of suitable specifications & which can withstand respective flow of current, with the purpose of providing the option for isolating the battery bank & SPV arrays should be made. There shall be copper bus bars of suitable rating. Proper rating HRC fuse & MCCB/Isolator for DC application should be suitably installed in DCDB as battery bank isolator. Best quality DC Ah meter has to be installed to measure the cumulative charging & discharging status of battery bank.

ARRAY JUNCTION BOX (AJB):

AJB shall have terminals of bus-bar arrangement of appropriate size Junction boxes shall have suitable cable entry with suitable glanding arrangement for both input and output cables. AJB should have suitable arrangement Reverse Blocking diode (Schottky diode of suitable rating with respect to the capacity of array)) connected in such a manner that the diode is mounted on a proper heat sink so as to increase the life of diode. Suitable MOV/SPD has to be installed in AJB for protection purpose. Schottky diode & MOV/SPD should be installed in AJB.

MAIN JUNCTION BOX (MJB)

In MJB the terminals shall be of copper bus-bar arrangement of appropriate size Junction boxes shall have suitable cable entry with suitable glanding arrangement for both input and output cables. Suitable markings on the bus bars shall have to be provided to identify the bus bars etc.

CONTROL PANEL

Control Panel consisting all features, controls, metering, suitable SPD and Monitoring instruments required for

for ACDB & DCDB suitable for SPVPP (Cap 1 KWp to 3 KWp at 48 Volts DC, Cap 4 KWp to 6 KWp at 96 Volts DC) Output 230 Volts AC Single Phase according to MNRE Guidelines.

2. SPECIFICATION OF WIRES AND CABLES:-

1. All cables & wires shall be as per ISI specifications.
2. Power cable – Unarmored/Armored/ABC with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one two /four core
 - 2.1) 4 Sq mm,2 Core
 - 2.2) 6 Sq mm ,2 core
 - 2.3) 10 Sq mm ,4 core
 - 2.4) 16 Sq mm ,4 core
 - 2.5) 25 Sq mm ,4 core
3. All copper cables and wires used shall be of copper conductors of suitably cross-section with cross-linked polythene or polyvinyl insulated with polyvinyl sheath. Stranded and flexible cable shall be used. Non-stranded cables shall not be acceptable except otherwise mentioned and permitted.
4. Heavy duty multistand wire and cable P.V.C. insulated twisted bright annealed Copper 1100 Volts, IS 694, Size :- 1.5 Sq. mm.
5. Exposed cables, wherever, used, shall have UV resistant jacket besides being water resistant.
6. Buried underground cables shall be armoured.
7. Conductor sizes of cables and wires shall be selected based on efficient design criteria such that the overall electrical energy loss in any section of cable or wire is not more than three (3) percent under the designed operating conditions. Conductor sizes of less than 1.5 mm shall not be accepted.
8. Cable/Wire connections shall be soldered, crimp-on type or split-bolt type. Wire nut connectors shall not be used.
9. All cables shall be adequately supported. Outside of the terminal/panels/enclosures shall be protected by conduits. Cables shall be provided with dry type compression glands wherever they enter junction boxes/panels/enclosures.
10. All cables shall be suitably marked or color coded for easy identification. The marking of length of the cable should clearly marked on the cable
11. Cables and wires shall confirm to the relevant standards. Bidders to specify the specification, for any additional features.
12. Cables should in a packing of at least 100 m each.

3. TECHNICAL SPECIFICATION OF ARIEL BUNCH CABLE(ABC)

TECHNICAL SPECIFICATIONS FOR AERIAL BUNCHED CABLE HAVING XLPE INSULATED L.T. CABLE FOR WORKING VOLTAGE UPTO 1100 VOLT

1. SCOPE :	The specification covers design, manufacture, testing before despatch, transportation, supply and delivery of ISI marked 1100V Aerial Bunched Cable having XLPE insulated Cable (three Power Core) with stranded compact circular aluminium conductors twisted over an insulated aluminium alloy messenger wire for use as overhead distribution feeders, with/without one street lighting core with stranded compacted circular aluminium conductor XLPE insulated suitable for use on 3-Phase AC System conforming to IS-14255/1985 with up to date amendments.
2. LOCATION :	Aerial bunched Cables for use in L.T. overhead lines are preferred than conventional L.T. overhead lines with bare conductors as those are not subjected to frequent faults as happens with the bare conductors and also to minimise problem of tree clearance etc. ABC System is safer and eliminates use of insulators and associated hardwares required for bare conductors.
3. APPLICABLE STANDARDS :	Unless otherwise stipulated in this specification, the following standard with up to date amendment shall be applicable.
IS 14255-1995	Specification for AERIAL Bunched Cables for working Voltage Up to & including 1100 Volts.
IS : 8130	Specification for Conductors for Insulated Cables.
IS : 398 (Part-IV)	Specification for Aluminium Alloy Conductor.
4. RATED VOLTAGE :	The rated Voltage of LT AB Cables shall be 1100 Volts.
5. CONDUCTORS :	The Aluminium Conductors for phase/street lightning conductor shall be H2 of H4 grade Aluminium complying with the requirements of IS-8130-1984 with up to date amendments. For messenger wire stranded All Aluminium Conductor shall be of heat treated Aluminium Magnesium-Silicon Alloy Wires containing approximate 0.5% magnesium and 0.5% silicon conforming to IS-398 (Part-IV)/1984 with up to date amendments. The stranded conductor shall be clean & reasonably uniform in size and shape and its surface shall be free from sharp edges. Not more than two joints shall be allowed in any of the wires forming every complete length of conductor and no joint shall be within 300 mm. of any other joint in the same layer. The joint shall be brazed, silver soldered or electric or gas welded. No joint shall be made in the conductor, once it has been stranded.
6. INSULATION :	The Conductor (with protective barrier, wherever applied) shall be provided with cross linked polyethylene applied by extrusion conforming to the standard Specification as per IS 14255/95. The average thickness of insulation when measured in accordance with relevant clause of the specification, shall not be less than standard value specified. Upper surface of Cable insulation should be Ultra Violet Ray resistant Colour of insulation shall be black.
7. CORE IDENTIFICATION :	The Phase Conductors shall be insulated with black weather resistant, XLPE suitable for 1100 Volt insulation. The Phase Conductor shall be provided with one, two and three ridges for quick identification. The individual cores thus formed shall then be laid up around insulated messenger wire. The insulated messenger wire shall have four ridges as per IS 14255:1995. The insulated street lighting conductor shall not have any identification mark.

8.	MESSENGER-CUM-NEUTRAL WIRE :
	The insulated messenger wire shall be of aluminium alloy, generally conforming to IS 398 (Part-IV)/1994 and suitably compacted to have smooth round surface to avoid damage to the other insulating sheath of phase conductor twisted around the messenger.
9.	LAYING UP :
	Three Power Cores having Ridges one, two and three and one street lighting without any ridge, if any should be twisted over insulated messenger wire with right hand direction of lay. This will form the Aerial Bunched Cable. Lay ratio shall be as specified in IS:14255/1995.
10.	TESTS FOR CABLES :
10.1	Type test reports not older than 5 years of at least two sizes of Aerial Bunched Cables with & without street lighting core being procured and as specified in relevant IS & IEE and detailed in Clause 5:1 got conducted from independent recognised Test House shall be furnished by the bidders along with the bid. The bid not accompanied with test reports may not be considered for evaluation.
	TYPE TEST REPORTS SHALL CONTAIN DETAILS OF FOLLOWING TYPE TESTS AS PER IS 8130-1984 & IS 10810
1.	Tests on Phase/Street Light Conductor :
i)	Tensile Test
ii)	Wrapping Test.
iii)	Resistance Test.
2.	Test on Messenger Conductor ;
i)	Breaking Load.
ii)	Elongation Test.
iii)	Resistance Test.
3.	Physical Test for XLPE insulation :
i)	Tensile Strength and elongation at break.
ii)	Ageing in oven.
iii)	Hot Set Test.
iv)	Shrinkage Test.
v)	Water Absorption (Gavimetric)
4.	Test for thickness insulation.
5.	Insulation performance (Volume resistivity) Test.
6.	High Voltage Test.
	Report of above and any other type test provided in the relevant Indian Standards shall also be supplied.
10.2	ROUTINE TEST ;
	These shall be carried out on all sizes of all drums of unarmoured Cables by the supplier as given in Clause 5.1 and shall be got approved before despatch.
	The Cable shall be inspected and tested at the manufacturer's works before despatch as per ISS mentioned in schedule of requirement. The manufacturer shall arrange all the necessary machinery, apparatus and labour required for the testing purpose.
	The routine tests embodied in the respective ISS are as per list given below :
	1. Conductor Resistance Test.
	2. High Voltage Test at room temperature.
	3. Cold Bend Test (optional)
	Any other routine test provided in the relevant Indian Standards shall also got conducted by the supplier.

10.3	ACCEPTANCE TEST :
	These tests as per relevant IS & IEC shall be carried out in the presence of the purchaser's representative if so desired by the purchaser. The following shall constitute the acceptance tests.
(a)	Tensile Test (for phase/street light conductor)
(b)	Wrapping Test (for phase/street light conductor)
(c)	Breaking Load Test for messenger Conductor.
(d)	Elongation test for messenger conductor.
(e)	Conductor resistance test.
(f)	Test for thickness of insulation.
(g)	Tensile Strength and Elongation at Break Test.
(h)	Hot Set Test for XLPE insulation.
(i)	Insulation resistance test and
(j)	High Voltage Test.
11.	SEQUENTIAL MARKING :
	Due to technical difficulty Marking of the Sequential Length is not required. Instead the Weight of Cable for all sizes shall have to be mentioned for Per K.M. Length.
12.	PACKING & MARKING :
	The Cable shall be supplied on suitable sized wooden non-returnable drum of robust construction for each length of Cables as per I.S. 10418. A layer of water proof paper shall be applied to the surface of the drums and over the outer cable layer. A clear space at least 40 mm. shall be left between the Cable and Logging. Wood preservative shall be applied to the entire drum. Each metre length shall be embossed with the Trade Name of Manufacturer and the work 'ELECTRIC WBSEDCL'. Packing shall be sturdy to protect the Cable from any injury during transportation handling and storage. Both Cable ends shall be sealed with PVC/Rubber Caps to eliminate ingress of moisture. Each Cable Drum shall have following information stenciled on it.
a)	Manufacturer's Name, Brand Name of Trade Mark.
b)	Year of Manufacture.
c)	Nominal Cross-Sectional area of the Cable Conductor.
d)	Type of Cable and Voltage Grade.
e)	Length of the Cable.
f)	Number of the Cores.
g)	ISI Certification Mark, IS reference.
h)	Colour of outer sheath.
i)	No. of lengths in Drum (if more than one)
j)	Cable Code.
k)	Direction of rotation of drum (by means of an arrow)
l)	Approximate gross weight in Kg./Km.
	The standard Drum Length will be 500 mtrs. in each Drum for all sizes subject to a tolerance of $\pm 5\%$.
13.	INSPECTION :
	The Cable shall be inspected at manufacturer's works before despatch as per IS-7098 (Part-I)/1988 (with upto date amendments) & IS 14255/1995. All the acceptance tests embodied in the above shall be performed by the Inspecting Officer. The Manufacturer shall arrange without making any extra charges with all the necessary machinery, apparatus and labour requirement for the testing purpose. The Cable requirement for testing shall be to Firm's Account.
14.	LITERATURE AND MANUAL :
	To be submitted as per General Terms & Conditions of Contract.
15.	GUARANTEED TECHNICAL PARTICULARS :
	To be submitted along with Tender documents.

A. DESCRIPTION OF 1.1 KV AERIAL BUNCHED CABLES :

Description	Size
	Ph.Wire + St.Light Wire + Messenger-Cum-Neutral Wire
1100V Grade L.T. Aerial Bunched Cable having three Power Core & One Neutral-Cum-Messenger Core of stranded compacted circular Aluminium Black coloured XLPE insulated & Core identification by ridges, one, two and three & four respectively. One Street Lighting Core of stranded, compacted Circular Aluminium Conductor, Black coloured XLPE insulated without any identification mark. Messenger-Cum-Neutral Wire should be of stranded compacted Circular Aluminium Alloy Conductor conforming to IS 8130/1984, IS-398(Part-IV)/1979 and IS-14255/1995 with upto date amendments, if any.	1) 3x25 + 1x16 + 1x25 sq.mm. 2) 3x35 + 1x16 + 1x25 sq.mm. 3) 3x50 + 1x16 + 1x35 sq.mm. 4) 3x70 + 1x16 + 1x50 sq.mm. (Provision for street light conductor is optional and as per requirement)
[Sizes of Power Conductor & Messenger Wire may vary as per requirement]	

B. ACCESSORIES REQUIRED FOR DRAWAL OF L.T. OVERHEAD LINE WITH 1100V GRADE AERIAL BUNCHED CABLES ON PCE POLE SUPPORT

Sl. No.	Description
1.	Anchor Clamp (3-Bolt and 2 Bolt Type)
2.	Eye hook with Suspension Clamp Assembly.
3.	PCC Pole Clamp.
4.	Insulation Piercing Connectors with cover or P.G.Connectors with insulation cover.
5.	Water Proof pre-insulated Hexagonal Compression Connectors & Lugs.

NOTE : Offer for L.T. Aerial Bunched Cables should cover required accessories with details of dimensions, materials and provisional quantity per K.M. of L.T. O/H Line.

DIMENSIONAL AND ELECTRICAL PARAMETERS :

LTABC : The standard sizes and technical characteristics for Single Core Cable.

Parameters	Nominal Sectional Area of Conductors (sq.mm.)				
	16	25	35	50	70
No. of Strands	4	7	7	7	7
Dia. of Compacted Conductor (MM)	4.4	5.5	6.8	7.9	9.4
Approx. Mass (Kg./Km.)	42	65	95	127	170
Max. DC resistance at 20°C (ohm/km.)	1.91	1.20	0.868	0.641	0.443
Insulation Thickness (mm.)	1.2	1.2	1.2	1.5	1.5
Current rating at 40°C in air.	60	85	100	120	155

Note : The resistance values given in the Table are the max. permissible one.

TECHNICAL CHARACTERISTIC OF INSULATED MESSENGER-CUM-NEUTRAL WIRE FOR LT ABC :

Nominal Sectional Area (mm.)	Dia. of Compacted Conductor(mm.)	Approx. mass (Kg./Km.)	Max. D.C. resistance At 20C (Ohm./Km.)	Minimum Tensile Strength (KN)
25	5.9	65	1.38	7.4
35	6.9	95	0.986	10.3
50	7.9	127	0.689	14.0

4. **TECHNICAL SPECIFICATION OF ELECTRICAL AND ELECTRONICS ITEMS ALONG WITH ELECTRICAL HARDWARE**

1. Electronic circuits in use shall be modular IE standard in design to allow for ease of service, maintenance and replacement.
2. All electronic circuits shall be housed in suitable packages or panels or enclosures so as to conceal them from general public. However, these shall be easily accessible to trained technicians for maintenance.
3. Suitable number of protective fuses shall be included. Safe accessibility for easy replacement, if required, shall be ensured.
4. The control circuit shall provide for an emergency shut down for the system and manual reconnect facilities.
5. Power Factor of all types of Electronic Ballast should be > 0.90 .
6. Only mercury displacement relays or equivalent shall be used in the power circuits. Mechanical relays are not acceptable.
7. The electronic circuitry shall be rated at least for an operating temperature of 0°C to 48°C and a storage temperature - 10°C + 55°C .

HARDWARE

1. The hardware material shall be of ISI specification wherever mentioned in the Price Bid. If mentioned items does not come in the category of specified in ISI then also the quality of those items shall be of best available in the category.
2. All the material shall match with the requirement of the purpose of installation at site.

Rest all other technical specification shall be strictly as mentioned in the price bid

5. **TECHNICAL SPECIFICATION OF ELECTRICAL EQUIPMENT AND SAFETY EQUIPMENT**

S.	Items	Technical Specification
1	Timer	Digital Timer with inbuilt contactor (up to 3Kw SPVPP) with 10 time zone setting as per ISI standards
2		Digital Timer with inbuilt contactor (4KWp TO 10 KWp SPVPP) with 10 time zone setting as per ISI standards setting
3	DC Voltmeter	DC Voltmeter Meter for DCDB of solar power plant
		(0-200)V for (1KW to 6KW)SPVPP
		(0-300)V for (8KW to 15KW)SPVPP
4	DC Ammeter	DC Ammeter
		75-0-75 for 1KW SPVPP
		150-0-150 for 2KW to 15KW
5	Digital AH meter	Digital AH Meter for DCDB of solar power plant
		40-80VDC for 1KW-2KW SPVPP
		80-170VDC for 3KW-6KW SPVPP
		100-260VDC for 8KW-15KW SPVPP
6	Insulation Mat	High Voltage Class "C" Insulating mat as per IS:15652-2006 3 mm Thikness,ISI marked upto 33KV Grade.MakeHoneywell,PPL,Zenith
7	Aluminium Ladder	Wall Supported Aluminium Ladder manufactured from high tensile aluminium alloys :-
		Single ladder closed type 12 Feet Height
		Single ladder Extended type 20 Feet Height
		Folding Plat form Aluminium Ladder 20 Feet Height
		Single Ladder Extended Type 35 Feet Height

8	PVC Earth Pit Chamber	PVC Earth Pit Chamber :-
		Top dimension 180x180mm, Bottom Dimension 250x250mm, Height 210mm
		Top dimension 230x230mm, Bottom Dimension 320x320mm, Height 230mm
		Top dimension 300x300mm, Bottom Dimension 405x405mm, Height 300mm
9	Digital Clamp meter	Digital clamp meter ,Fluke,Metravi,Meco
		Average, 3 3/4 digitals (4000 Counts), Auto / Manual ranging, 1000V AC/DC & Up to 1000A AC ,55mm Clamp Jaw Size , Capacitance / Diode Continuity /Frequency Testing, Auto Power off / Data hold / Zero Adjustment Make : Fluke or Equivalent
10	Digital Earth Tester	Digital Earth tester as per specification stated below, Fluke ,Metravi,Meco
		3 & 1/2 Digit LCD display with Max Reading 1999, Earth Resistance Ranges of 0.01Ω to 1999Ω, Rechargeable Internal Ni-MH Battery, 4 Wire Soil Resistivity Measurement , Measurement Method-3 terminal & 4 Terminal with test kit Model DET-20 Make : Motwane or Equivalent
11	Tool Kit	Mechanic Tool kit set GSB 550 -Watt Impact drill kit(Blue range,122 pieces) Make: Bosch,Hilti or Equivalent.
12	TDS Meter	TDS Meter for water quality measurement
13	Digital Multimeter	Digital multi meter 20A SSC Fluke ,Metravi,Meco make
14	Digital Thermometer	Digital Thermometer for temperature Measurement as per ISI standards Fluke ,Metravi,Meco
15	Vernier Callipers	Vernier callipers ,Mitutoyo make Measuring Range (0-150)MM
16	Screw Gauge	Screw gauge ,Mitutoyo make of equivalent Measuring Range(0-25)MM
17	Hand Gloves	Supply of Electrical Rubber Insulating Hand Gloves for Electrical Purposes IS:4770,IEC:60903
18	Helmets	Supply of Helmets with PVC lining as per (IS: 2745-1983),IS:2925
19	Safety Shoe	Supply of safety shoe antistatic of any size as per IS:15298
20	Digital Coating thickness Gauge	Supply of Digital coating thickness gauge, Measuring Range 6mm, 0.1<20 Microns, 1>20 Microns,Metravi or equivalent make
21	Crimping Tool	Supply of crimping tool for crimping of wire Ranging from 01 Sq mm to 16 Sq mm Stanley,Taparia,Bosch or equivalent make
22	Safety Belt	Supply of full body harness with double rope and scaffold hook nylon safety belt for solar dual pump technician as per IS:3521

Section-04

1.Price Bid-A

(For supply of ACDB,DCDB,AJB,MJB used in PDN works during operation and maintenance of solar systems)

(bidding as per Specifications & Scope of Work of No.81323/CREDA/HOR/RE-V/Electrical material/2021-22 Dated : 27-08-2021)

S. No	Item code	Particulars	Unit	Rates (Exe.GST)
01	A 1	Supply of ACDB suitable for SPVPP (Cap 1 KWp to 3 KWp at 48 Volts DC), Output 230 Volts AC Single Phase with timer and suitable SPD according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	
02	A 2	Supply of ACDB suitable for SPVPP (Cap 4 KWp to 6KWp at 96 Volts DC) Output 230 Volts AC Single Phase with timer suitable SPD according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	
03	A 3	Supply of ACDB suitable for SPVPP (Cap 8 KWp to 10 KWp at 120 Volts DC) Output 230 Volts AC Single Phase with timer suitable SPD according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	
04	A 4	Supply of DCDB suitable for SPVPP (Cap 1 KWp to 3 KWp at 48 Volts DC) according to MNRE Guidelines as per specifications mentioned in drawing”.	Nos	
05	A 5	Supply of DCDB suitable for SPVPP (Cap 4 KWp to 6 KWp at 96 Volts DC) according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	
06	A 6	Supply of DCDB suitable for SPVPP (Cap 8 KWp to 10 KWp at 120 Volts DC) according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	
07	A 7	Supply of Control Panel consisting all features, controls, metering, suitable SPD and Monitoring instruments required for ACDB &DCDB suitable for SPVPP (Cap upto 1 KWp at 24 Volts DC) Output 230 Volts AC Single Phase according to MNRE Guidelines .	Nos	
08	A 8	Supply of Control Panel consisting all features, controls, metering, suitable SPD and Monitoring instruments required for ACDB &DCDB suitable for SPVPP (Cap 1 KWp to 3 KWp at 48 Volts DC) Output 230 Volts AC Single Phase according to MNRE Guidelines .	Nos	
09	A 9	Supply of Control Panel consisting all features, controls, metering ,suitable SPD and Monitoring instruments required for ACDB & DCDB suitable for SPVPP (Cap 4 KWp to 6 KWp at 96 Volts DC) Output 230 Volts AC Single Phase according to MNRE Guidelines .	Nos	
10	A 10	Array junction Box 4 input 1 output with SPD	Nos	
11	A 11	Array junction Box 6 input 1 output with SPD	Nos	
12	A 12	Main junction Box 2 input 1 output with necessary protections	Nos	

Certified that rates quoted above are as per the requirement, specifications, and terms & condition mentioned in the tender document. Above rates are FOR anywhere in the State of Chhattisgarh

inclusive of roadworthy packing, loading, unloading, all types of incidental expenses, insurance, duties and any other job required to properly execute the work. The GST payable on the bill produced for payment to CREDA shall be paid in addition to above quoted price as per rate of GST applicable at the time of billing.
(No other cost will be claimed above the price quoted)

Note:- Partial bidding shall be not allowed. Bidder shall have to quote rates for all items.

Signature of Bidder

Name _____

Seal _____

Signature_____

2.PRICE BID -B

Schedule of Rates for supply of cables of different sizes for operation and maintenance of solar power plant

(bidding as per Specifications & Scope of Work of No.81323/CREDA/HOR/RE-V/Electrical material/2021-22 Dated : 27-08-2021)

S. No.	Item Code	Description of Item	Unit	Rate (Exe.GST)
1		Heavy duty multistand wire and cable P.V.C. insulated twisted bright annealed Copper 1100 Volts, IS 694, Size :-		
	B 1.1	(1) 1.0 Sq.mm	Meter	
	B 1.2	(2) 1.5 Sq.mm	Meter	
	B 1.3	(3) 2.5 Sq.mm	Meter	
	B 1.4	(4) 4 Sq.mm	Meter	
	B 1.5	(5) 6 Sq.mm	Meter	
	B 1.6	(6) 10 Sq.mm	Meter	
	B 1.7	(7) 16 Sq.mm	Meter	
	B 1.8	(8) 25 Sq.mm	Meter	
	B 1.9	(9) 35 Sq.mm	Meter	
2	-	Aluminium wire P.V.C. Insulated sheathed and single core cable for working voltage upto 1100 volts, IS 694/1990 size		
	B 2.1	(i) 1/1.40 mm (1.5 sq.mm)	Meter	
	B 2.2	(ii) 1/1.78 mm (2.5 sq.mm)	Meter	
	B 2.3	(iii) 1/2.24 mm (4.0 sq. mm)	Meter	
	B 2.4	(iv) 1/2.76 mm (6.0 sq. mm)	Meter	
	B 2.5	(v) 1/3.57 mm (10.0 sq. mm)	Meter	
3	-	Aluminium wire P.V.C. Insulated sheathed and twin core cable for working voltage upto 1100 volts, IS 694/1990 size		
	B 3.1	(i) 1/1.40 mm (1.5 Sq.mm) Solid Conductor	Meter	
	B 3.2	(ii) 1/1.78 mm (2.5 Sq. mm) Solid Conductor	Meter	
	B 3.3	(iii) 1/2.24 mm (4 Sq. mm) Solid Conductor	Meter	
	B 3.4	(iv) 1/2.76 mm (6Sq. Mm) Solid Conductor	Meter	
	B 3.5	(v) 1/3.57 mm (10 Sq.mm) Solid Conductor	Meter	
	B 3.6	(vi) 7 / 1.70mm (16 Sq.mm) Standard Conductor)	Meter	
4	-	ACSR wire for A.C. distribution ISI make		
	B 4.1	(1) 10 Sq. mm	Meter	
	B 4.2	(2) 16 Sq. mm	Meter	
5	-	Power cable - Unarmoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one two core		
	B 5.1	(1) 1.5 Sq.mm	Meter	
	B 5.2	(2) 2.5 Sq.mm	Meter	
	B 5.3	(3) 4 Sq.mm	Meter	
	B 5.4	(4) 6 Sq.mm	Meter	
	B 5.5	(5) 10 Sq.mm	Meter	
	B 5.6	(6) 16 Sq.mm	Meter	
	B 5.7	(7) 25 Sq.mm	Meter	

6	-	Power cable - Unarmoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one three core		
	B 6.1	(1) 1.5 Sq.mm	Meter	
	B 6.2	(2) 2.5 Sq.mm	Meter	
	B 6.3	(3) 4 Sq.mm	Meter	
	B 6.4	(4) 6 Sq.mm	Meter	
	B 6.5	(5) 10 Sq.mm	Meter	
	B 6.6	(6) 16 Sq.mm	Meter	
	B 6.7	(7) 25 Sq.mm	Meter	
7	-	Power cable - Unarmoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one four core		
	B 7.1	(1) 1.5 Sq.mm	Meter	
	B 7.2	(2) 2.5 Sq.mm	Meter	
	B 7.3	(3) 4 Sq.mm	Meter	
	B 7.4	(4) 6 Sq.mm	Meter	
	B 7.5	(5) 10 Sq.mm	Meter	
	B 7.6	(6) 16 Sq.mm	Meter	
	B 7.7	(7) 25 Sq.mm	Meter	
8	-	Power cable - Armoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one two core		
	B 8.1	(1) 1.5 Sq.mm	Meter	
	B 8.2	(2) 2.5 Sq.mm	Meter	
	B 8.3	(3) 4 Sq.mm	Meter	
	B 8.4	(4) 6 Sq.mm	Meter	
	B 8.5	(5) 10 Sq.mm	Meter	
	B 8.6	(6) 16 Sq.mm	Meter	
	B 8.7	(7) 25 Sq.mm	Meter	
9	-	Power cable - Armoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one three core		
	B 9.1	(1) 1.5 Sq.mm	Meter	
	B 9.2	(2) 2.5 Sq.mm	Meter	
	B 9.3	(3) 4 Sq.mm	Meter	
	B 9.4	(4) 6 Sq.mm	Meter	
	B 9.5	(5) 10 Sq.mm	Meter	
	B 9.6	(6) 16 Sq.mm	Meter	
	B 9.7	(7) 25 Sq.mm	Meter	
10	-	Power cable - Armoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one four core		
	B 10.1	(1) 1.5 Sq.mm	Meter	
	B 10.2	(2) 2.5 Sq.mm	Meter	
	B 10.3	(3) 4 Sq.mm	Meter	
	B 10.4	(4) 6 Sq.mm	Meter	
	B 10.5	(5) 10 Sq.mm	Meter	
	B 10.6	(6) 16 Sq.mm	Meter	
	B 10.7	(7) 25 Sq.mm	Meter	
11	-	Power cable - Unarmoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, two core		
	B 11.1	(1) 1.5 Sq.mm	Meter	
	B 11.2	(2) 2.5 Sq.mm	Meter	

	B 11.3	(3) 4 Sq.mm	Meter	
	B 11.4	(4) 6 Sq.mm	Meter	
	B 11.5	(5) 10 Sq.mm	Meter	
	B 11.6	(6) 16 Sq.mm	Meter	
	B 11.7	(7) 25 Sq.mm	Meter	
12	-	Power cable - Unarmoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, three core		
	B 12.1	(1) 1.5 Sq.mm	Meter	
	B 12.2	(2) 2.5 Sq.mm	Meter	
	B 12.3	(3) 4 Sq.mm	Meter	
	B 12.4	(4) 6 Sq.mm	Meter	
	B 12.5	(5) 10 Sq.mm	Meter	
	B 12.6	(6) 16 Sq.mm	Meter	
	B 12.7	(7) 25 Sq.mm	Meter	
13	-	Power cable - Unarmoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, four core		
	B 13.1	(1) 1.5 Sq.mm	Meter	
	B 13.2	(2) 2.5 Sq.mm	Meter	
	B 13.3	(3) 4 Sq.mm	Meter	
	B 13.4	(4) 6 Sq.mm	Meter	
	B 13.5	(5) 10 Sq.mm	Meter	
	B 13.6	(6) 16 Sq.mm	Meter	
	B 13.7	(7) 25 Sq.mm	Meter	
14	-	Power cable - Armoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, two core		
	B 14.1	(1) 1.5 Sq.mm	Meter	
	B 14.2	(2) 2.5 Sq.mm	Meter	
	B 14.3	(3) 4 Sq.mm	Meter	
	B 14.4	(4) 6 Sq.mm	Meter	
	B 14.5	(5) 10 Sq.mm	Meter	
	B 14.6	(6) 16 Sq.mm	Meter	
	B 14.7	(7) 25 Sq.mm	Meter	
15	-	Power cable - Armoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988,three core		
	B 15.1	(1) 1.5 Sq.mm	Meter	
	B 15.2	(2) 2.5 Sq.mm	Meter	
	B 15.3	(3) 4 Sq.mm	Meter	
	B 15.4	(4) 6 Sq.mm	Meter	
	B 15.5	(5) 10 Sq.mm	Meter	
	B 15.6	(6) 16 Sq.mm	Meter	
	B 15.7	(7) 25 Sq.mm	Meter	
16	-	Power cable - Armoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, four core		
	B 16.1	(1) 1.5 Sq.mm	Meter	
	B 16.2	(2) 2.5 Sq.mm	Meter	
	B 16.3	(3) 4 Sq.mm	Meter	
	B 16.4	(4) 6 Sq.mm	Meter	
	B 16.5	(5) 10 Sq.mm	Meter	
	B 16.6	(6) 16 Sq.mm	Meter	
	B 16.7	(7) 25 Sq.mm	Meter	

17		<p>Supply of 1100V Grade L.T. Aerial Bunched Cable having three Power Core & One Neutral-Cum-Messenger Core of stranded compacted circular Aluminium Black coloured XLPE insulated & Core identification by ridges, one, two and three & four respectively. One Street Lighting Core of stranded, compacted Circular Aluminium Conductor, Black coloured XLPE insulated without any identification mark. Messenger-Cum Neutral Wire should be of stranded compacted Circular Aluminium Alloy Conductor conforming to IS 8130/1984, IS-398(Part-IV)/1979 and IS-14255/1995 with upto date amendments, if any</p> <p>Note:-Offer for Ariel bunch cables should cover required accessories(Anchor clamp, Eyehook with suspension clamp assembly, Pole Clamp, Insulation piercing connectors with cover or PG connector with insulation cover, Water proof pre-insulated hexagonal compression connectors lugsetc)with details of dimension ,materials and provisional quantity per 500 Mtr of power distribution line</p>		
		Ph.Wire + St.Light Wire + Messenger-Cum Neutral Wire	Meter	
	B 17.1	(1) 3x10 + 1x6 + 1x10 sq.mm	Meter	
	B 17.2	(2) 3x25 + 1x16 + 1x25 sq.mm.	Meter	
	B 17.3	(3) 3x35 + 1x16 + 1x25 sq.mm.	Meter	
	B 17.4	(4) 3x50 + 1x16 + 1x35 sq.mm.	Meter	
	B 17.5	(5) 3x70 + 1x16 + 1x50 sq.mm.	Meter	
18	-	Supply of flat submersible cable as per ISI standards		
	B 18.1	(1) 2.5 Sq. mm 3 core	Meter	
	B 18.2	(2) 4 Sq. mm 3 core	Meter	

Certified that rates quoted above are as per the requirement, specifications, and terms & condition mentioned in the tender document. Above rates are FOR anywhere in the State of Chhattisgarh inclusive of roadworthy packing, loading, unloading, all types of incidental expenses, insurance, duties and any other job required to properly execute the work. The GST payable on the bill produced for payment to CREDA shall be paid in addition to above quoted price as per rate of GST applicable at the time of billing.

(No other cost will be claimed above the price quoted)

Note:- Partial bidding shall be not allowed. Bidder shall have to quote rates for all items.

Signature of Bidder

Name _____

Seal _____

Signature_____

3.PRICE BID C

SCHEDULE OF RATES FOR SUPPLY OF ELECTRICAL& ELECTRONIC ITEMS, LUMINARIES, FIXTURES, HARDWARE & ACCESSORIES REQUIRED FOR AC/DC FOR SPV POWER PLANT ANYWHERE IN THE STATE OF CHHATTISGARH

(bidding as per Specifications & Scope of Work of No.81323/CREDA/HOR/RE-V/Electrical material/2021-22 Dated :

S. No.	Item code	Description of Item	Unit	Rate(Exe. GST)
1	-	LED Street lighting Luminaire ,0.90<PF,IP65 & 66 protection,External voltage surge protection,copper Earth wire conductor 2 feet,Separate Heat Sink,Separate driver compartment(>30Watt Luminaries) Make Havells or equivalent		
	C 1.1	9W	Per piece	
	C 1.2	15W	Per piece	
	C 1.3	18W	Per piece	
	C 1.4	25W	Per piece	
	C 1.5	30W	Per piece	
	C 1.6	40W	Per piece	
	C 1.7	60W	Per piece	
	C 1.8	85W	Per piece	
	C 1.9	90W	Per piece	
	C 1.10	110W	Per piece	
2	-	Distribution Box with provision for MCB & HRC Fuse of IS: 13032 (with Neutral Link, Single Phase)		
	C 2.1	(1) Two way suitable for 2 x 16Amp at 240V	Per piece	
	C 2.2	(2) Three way suitable for 4 x 16Amp at 240V	Per piece	
	C 2.3	(3) Four way suitable for 4 x 16Amp at 240V	Per piece	
	C 2.4	(4) Two way suitable for 4 x 63Amp at 240V	Per piece	
	C 2.5	(5) Three way suitable for 4 x 63Amp at 240V	Per piece	
	C 2.6	(6) Four way suitable for 4 x 63Amp at 240V	Per piece	
3	-	DC MCB of IS 8828 - 1996 make, Single Pole of Capacity (With out enclosure)		
	C 3.1	(1) 2.5 Amp	Per piece	
	C 3.2	(2) 6Amp	Per piece	
	C 3.3	(3) 10Amp	Per piece	
	C 3.4	(4) 16Amp	Per piece	
	C 3.5	(5) 20Amp	Per piece	
	C 3.6	(6) 25Amp	Per piece	
	C 3.7	(7) 32Amp	Per piece	
	C 3.8	(8) 63Amp	Per piece	
	C 3.9	(9) 100 Amp	Per piece	
4	-	DC MCB of IS 8828 - 1996 make, Double Pole of Capacity (With out enclosure)		
	C 4.1	(1) 2.5 Amp	Per piece	
	C 4.2	(2) 6Amp	Per piece	
	C 4.3	(3) 10Amp	Per piece	
	C 4.4	(4) 16Amp	Per piece	
	C 4.5	(5) 20Amp	Per piece	
	C 4.6	(6) 25Amp	Per piece	
	C 4.7	(7) 32Amp	Per piece	
	C 4.8	(8) 63Amp	Per piece	
	C 4.9	(9) 100 Amp	Per piece	

5	-	A. C. MCB, IS 8828 -1996, Single Pole (without enclosure)		
	C 5.1	(i) 1 A	Per piece	
	C 5.2	(i) 2.5 A	Per piece	
	C 5.3	(ii) 6 A	Per piece	
	C 5.4	(iii) 10 A	Per piece	
	C 5.5	(iv) 16 A	Per piece	
	C 5.6	(v) 20 A	Per piece	
	C 5.7	(vi) 25 A	Per piece	
	C 5.8	(vii) 32 A	Per piece	
	C 5.9	(viii) 63 A	Per piece	
	C 5.10	(ix) 100 A	Per piece	
6	-	Change over switch, 230Volt, Make- Havells , HPL or equivalent.		
	C 6.1	(1) 16Amp	Per piece	
	C 6.2	(2) 40Amp	Per piece	
	C 6.3	(3) 60Amp	Per piece	
7	-	Change over switch Double Pole, 230Volt, Make- Havells , HPL or equivalent.		
	C 7.1	(1) 16Amp	Per piece	
	C 7.2	(2) 40Amp	Per piece	
	C 7.3	(3) 60Amp	Per piece	
8	C 8	Change Over Switch 63 Amp. 4 pole ISI make	Per piece	
9	-	M.C.B. Enclosure Steel sheet powder coated suitable for		
	C 9.1	(i) 02 Nos. MCB.	Per piece	
	C 9.2	(ii) 03 Nos. MCB.	Per piece	
	C 9.3	(iii) 04 Nos. MCB.	Per piece	
	C 9.4	(iv) 08 Nos. MCB.	Per piece	
	C 9.5	(v) 12 Nos. MCB.	Per piece	
10	-	M.C.B. Enclosure of Plastic body, suitable for		
	C 10.1	(i) 02 Nos. MCB (SP).	Per piece	
	C 10.2	(ii) 03 Nos. MCB(SP).	Per piece	
	C 10.3	(iii) 04 Nos. MCB(SP).	Per piece	
	C 10.4	(iv) 08 Nos. MCB(SP).	Per piece	
	C 10.5	(v) 12 Nos. MCB(SP).	Per piece	
11	-	HRC Fuse of ISI make		
	C 11.1	(i) 6 Amp	Per piece	
	C 11.2	(ii) 10Amp	Per piece	
	C 11.3	(iii) 16 Amp	Per piece	
	C 11.4	(iv) 20 Amp	Per piece	
	C 11.5	(v) 32 Amp	Per piece	
	C 11.6	(vi) 50 Amp	Per piece	
	C 11.7	(vii) 63 Amp	Per piece	
	C 11.8	(viii) 100 Amp	Per piece	
12	C 12	H.R.C. Fuse holder 32 Amp.	Per piece	
13	C 13	H.R.C. Fuse holder 63 Amp.	Per piece	
14	-	Junction box unbreakable thermo plastic. IP 65 protection, suitable for outdoor application, fire retardant up to 750°C chemical resistance suitable for given size and terminal of Hensel make		
	C 14.1	(i) 88 x 88 x 53 – 2.5 Sq. mm with terminal	Per piece	
	C 14.2	(ii) 98 x 98 x 61 – 4 Sq. with terminal suitable for one in two out	Per piece	
	C 14.3	(iii) 167 x 125 x 82 with terminal 6/10 Sq.mm	Per piece	

	C 14.4	(iv) 200 x 160 x 98 with terminal five in one out of 16/25	Per piece	
15	C 15	M.S. Junction box Size 150mm x 200mm x100 mm. (18 Swg. Plate)	Per piece	
16	C 16	M.S. Junction box Size 250mm x 200mm x100 mm. (18 Swg. Plate)	Per piece	
17	-	Electronic Energy Meter, ISI make, Single Phase, Operating Voltage 120-300V, 45-55Hz of following ratings:		
	C 17.1	(1) 10-40A	per piece	
	C 17.2	(2) 10-60A	per piece	
18	-	Electronic Energy Meter, ISI make, Three Phase, Operating Voltage 120-440V, 45-55Hz of following ratings:		
	C 18.1	(1) 10-40A	per piece	
	C 18.2	(2) 10-60A	per piece	
19	-	Single module multi function Energy Meter can measure volts, Amp, ,Kwh and Kw, ,	per piece	
	C 19.1	20 Amp	per piece	
	C 19.2	30 Amp.	per piece	
20	C 20	Ceiling Rose 2 point, ISI make,	Per piece	
21	C 21	Switch 6A Flash Type ISI Make	Per piece	
22	C 22.1	(1) Socket 6 Amp, 3 pin. ISI make,	Per piece	
	C 22.2	(1) Socket 6 Amp, 5 pin. ISI make,	Per piece	
23	C 23.1	(1) PVC Cable clip (Kaju) Size 6mm	Per 100	
	C 23.2	(2) PVC Cable clip (Kaju) 12 mm	Per 100	
	C 23.3	(3) PVC Cable clip (Kaju) 20 mm	Per 100	
	C 23.4	(4) PVC Cable clip (Kaju) 25 mm	Per 100	
24	C 24.1	(1) PVC Elbow 20mm	Per piece	
	C 24.2	(2) PVC Elbow 25mm	Per piece	
25	C 25.1	(1) PVC Tee 20mm	Per piece	
	C 25.2	(2) PVC Tee 25mm	Per piece	
26	C 26	Power Plug 16 Amp. SS Combined with box	Per piece	
27	C 27.1	3 Pin top, 6 Amp., ISI make,	Per piece	
	C 27.2	3 Pin top, 16 Amp., ISI make,	Per piece	
28	-	Connector-Bakelite	Per piece	
	C 28.1	30 Amp, 500 V,2 way	Per piece	
	C 28.2	30 Amp, 500 V,5 way	Per piece	
	C 28.3	60 Amp, 500 V, 4 way Open type	Per piece	
	C 28.4	60 Amp, 500 V, 4 Close type	per piece	
29	-	PVC Casing &Caping, ISI make,		
	C 29.1	Size – (1) 20 mm.	Per mtr.	
	C 29.2	(2) 25 mm.	Per mtr.	
	C 29.3	(3) 32 mm	Per mtr.	
30	-	P.V.C. Pipe, ISI, Consealed Medium type		
	C 30.1	(1) 20 mm	Per mtr.	
	C 30.2	(2) 25 mm	Per mtr.	
31	-	PVC Conduit Special Pipe – ISI make		
	C 31.1	Size – (1) 20 mm	Per mtr.	
	C 31.2	(2) 25 mm	Per mtr.	
	C 31.3	(3) 32mm	Per mtr.	
32	-	P.V.C. Junction Box, ISI Make,		
	C 32.1	Size (1) 20 mm.	Per piece	
	C 32.2	(2) 25 mm.	Per piece	
33	-	P.V.C., Bend ISI Make, Long		

	C 33.1	Size (1) 20 mm.	Per piece	
	C 33.2	(2) 25 mm.	Per piece	
34	-	Board Sun mica, 6 mm thick teak wood		
	C 34.1	Size: 300 mm x 450 mm x 50 mm	Per piece	
	C 34.2	Size: 200 mm x 150 mm x 50 mm	Per piece	
35	-	Board PVC		
	C 35.1	Size: 100 mm x 100 mm x 50 mm	Per piece	
	C 35.2	Size: 175 mm x 100 mm x 50 mm	Per piece	
	C 35.3	Size: 200 mm x 150 mm x 50 mm		
36	-	Cycle Insulator Porcelain.		
	C 36	Size: 62 mm x 50 mm	Per piece	
37	C 37.1	(1) P.V.C. Ring Insulator, Heavy duty Size: 12 mm x 12 mm with inner dia 10 mm weather proof (white).	Per 100 piece	
	C 37.2	(2) P.V.C. Ring Insulator, Heavy duty Size: 20 mm x 20 mm with inner dia 16 mm weather proof (white).	Per 100 piece	
	C 37.3	(3) P.V.C. Ring Insulator, Heavy duty Size: 26 mm x 26 mm with inner dia 22 mm weather proof (white).	Per 100 piece	
38	C 38	Rawl Grip. 10 no. (PVC)	Per 100 pieces	
39	-	G.I. Wire		
	C 39.1	(1) 8 no.	Per kg	
	C 39.2	(2) 10 no	Per kg	
	C 39.3	(3) 12 no.	Per kg	
	C 39.4	(4) 16 no.	Per kg	
	C 39.5	(5) 18 no.	Per kg	
40	-	Service Pipe with G.I.Pipe 'B' Class, Length 10 feet		
	C 40.1	Size : (1) 19 mm.	Per piece	
	C 40.2	(2) 25 mm.	Per piece	
41	-	Service Pipe with G.I.Pipe 'B' Class, Length 7 feet		
	C 41.1	Size : (1) 19 mm.	Per piece	
	C 41.2	(2) 25 mm.	Per piece	
42	-	M.S. Clamp suitable for service pipe.		
	C 42.1	(1) 19 mm.	Per piece	
	C 42.2	(2) 25 mm.	Per piece	
43	C 43	Bombay Nails Size : 38mm x 50 mm	Per kg	
44	C 44	TATA Nails Size: 38mm x 50 mm	Per kg	
45	-	M.S. Nut Bolt with washer		
	C 45	10 mm x 150 mm	Per piece	
46	-	Screw natal fold		
	C 46.1	(1) 35 mm x 8 no.	Per 100	
	C 46.2	(2) 75 mm x 10 no.	Per 100	
	C 46.3	(3) 100 mm x 10 no.	Per 100	
47	C 47.1	(1) Machine Screw 3/16 x 25 mm with nut and washer	Per piece	
	C 47.2	(2) Machine Screw 3/16 x 38 mm with nut and washer	Per piece	
48	-	Steel Screw.		
	C 48.1	13 mm x 6 no.	Per 100	
	C 48.2	19 mm x 6 no.	Per 100	
49	-	P.V.C. Square Box.		
	C 49	Size: 100 mm x 100 mm	Per piece	
50	-	P.V.C. Insulate Tape.		
	C 50	19 mm x 8 mts. ISI Make.	Per piece	

51	-	Copper Plate.		
	C 51	300 mm x 300 mm x 03 mm Approx. 3kg	Per piece	
52	C 52	Copper wire 10 no.	Per kg	
53	-	Danger Plate of MS		
	C 53	Size: 125 mm x 200 mm	Per piece	
54	-	Copper Lugs, Ring /Pin Type, ISI suitable for		
	C 54.1	(i) 04 mm Wire	Per piece	
	C 54.2	(ii) 06 mm Wire	Per piece	
	C 54.3	(iii) 10 mm Wire	Per piece	
	C 54.4	(iv) 16 mm Wire	Per piece	
	C 54.5	(v) 25 mm Wire	Per piece	
55	C 55	Wall Mounted Fan 400mm (Bajaj/ Havells/Crompten)	Per piece	
56	C 56	BLDC Ceiling Fan 1200mm (Bajaj/ Havells/Crompten) 5 Star	Per piece	
57	C 57	Exhaust Fan 300mm (Bajaj/ Havells/Crompten)	Per piece	
58	C 58	Exhaust Fan 225mm (Bajaj/ Havells/Crompten)	Per piece	
59	C 59	Fan Regulator Step Type 5 Step (Socket Type)	Per piece	
60	C 60.1	(1) Indoor AC LED Tubelight 9 Watt/2 feet	Per piece	
	C 60.2	(2) Indoor AC LED Tubelight 18Watt/4 feet	Per piece	
61	C 61	LED bulb 9 watt	Per piece	
62	-	Surge Protecting Devices(SPD) as per ISI specification & IEC standards		
	C 62.1	(i)20 KA	Per piece	
	C 62.2	(ii)40KA	Per piece	
	C 62.3	(iii)60KA	Per piece	
	C 62.4	(iv)100KA	Per piece	
	C 62.5	(v)150KA	Per piece	
	C 62.6	(vi)200KA	Per piece	
63	-	SPD Enclosures suitable for above with standard material as per ISI specification & IEC standards		
	C 63.1	(i)20 KA	Per piece	
	C 63.2	(ii)40KA	Per piece	
	C 63.3	(iii)60KA	Per piece	
	C 63.4	(iv)100KA	Per piece	
	C 63.5	(v)150KA	Per piece	
	C 63.6	(vi)200KA	Per piece	
64	-	Battery bank Stand of FRP material as per ISI standards (Sintex or equivalent make) for		
	C 64.1	01 KW/24V(Battery Config.: -12V/150AH,2 Nos)SPVPP	Per piece	
	C 64.2	01 KW/48V(Battery Config.: -12V/150AH,4 Nos) SPVPP	Per piece	
	C 64.3	02 KW/48V(Battery Config.: -02V/300AH,24 Nos) SPVPP	Per piece	
	C 64.4	03 KW/48V(Battery Config.: -02V/400AH,24 Nos) SPVPP	Per piece	
	C 64.5	04 KW/48V(Battery Config.: -02V/300AH,24 Nos) SPVPP	Per piece	
	C 64.6	05 KW/96V(Battery Config.: -02V/400AH,48 Nos) SPVPP	Per piece	
	C 64.7	06 KW/96V(Battery Config.: -02V/400AH,48 Nos) SPVPP	Per piece	
	C 64.8	08 KW/120V(Battery Config.: -02V/600AH,60 Nos) SPVPP	Per piece	
	C 64.9	10 KW/120V(Battery Config.: -02V/600AH,60 Nos) SPVPP	Per piece	
	C 64.10	50W/240V(Battery Config.: -02V/800AH,120 Nos) SPVPP	Per piece	
65	-	By pass Diode as per ISI standards for solar modules		
	C 65.1	6 Amp		
	C 65.2	10 Amp	Per piece	
	C 65.3	12 Amp	Per piece	

	C 65.4	15 Amp	Per piece	
	C 65.5	20 Amp	Per piece	
66	C 66	MC4 connector of capacity 20 Amp as per ISI standards	Per piece	
67	C 67	Multistrand Copper cored Tinned DC cable for panel interconnection size 4 Sq mm	Mtr	
68	C 68	Battery Connector made up of copper as per ISI standards suitable for all type of batteries	Per piece	
69	-	Supply of Lightening Protection System as per the IS/IEC 62305-PART 3:2010.with all accessories such as connection terminal,Airterminal,Roundconductor,Insulator,Tape Etc.		
	C 69.1	Radius of protection 8 mtr with all accessories	Per piece	
	C 69.2	Radius of protection 10 mtr with all accessories	Per piece	
	C 69.3	Radius of protection 12 mtr with all accessories	Per piece	
	C 69.4	Radius of protection 16 mtr with all accessories	Per piece	
	C 69.5	Radius of protection 18 mtr with all accessories	Per piece	
	C 69.6	Radius of protection 20 mtr with all accessories	Per piece	
70	-	Cable tie, black, UV and weather-resistant, Polyamide material :-		
	C 70.1	2.5x100 SWUV	Per piece	
	C 70.2	2.5x150 SWUV	Per piece	
	C 70.3	2.5x200 SWUV	Per piece	
	C 70.4	3.6x100 SWUV	Per piece	
	C 70.5	3.6x150 SWUV	Per piece	
	C 70.6	3.6x200 SWUV	Per piece	
	C 70.7	3.6x250 SWUV	Per piece	
	C 70.8	3.6x290 SWUV	Per piece	
	C 70.9	3.6x365 SWUV	Per piece	

Certified that rates quoted above are as per the requirement, specifications, and terms & condition mentioned in the tender document. Above rates are FOR anywhere in the State of Chhattisgarh inclusive of roadworthy packing, loading, unloading, all types of incidental expenses, insurance, duties and any other job required to properly execute the work. The GST payable on the bill produced for payment to CREDA shall be paid in addition to above quoted price as per rate of GST applicable at the time of billing.

(No other cost will be claimed above the price quoted)

Note:- Partial bidding shall be not allowed. Bidder shall have to quote rates for all items.

Signature of Bidder

Name _____

Seal _____

Signature _____

4.PRICE BID D

SCHEDULE OF RATES FOR SUPPLY OF ELECTRICAL & ELECTRONIC EQUIPMENT & ACCESSORIES REQUIRED (AC/DC) FOR SPV POWER PLANT MAINTENANCE WORK ANYWHERE IN THE STATE OF CHHATTISGARH

(bidding as per Specifications & Scope of Work of No. 81323/CREDA/HOR/RE-V/Electrical material/2021-22 Dated : 27.08.2021)

S. No.	Item Code	Description of Item	Unit	Rate(Exe. GST)
1	D 1	Supply of Digital Timer with inbuilt contactor (up to 3Kw SPVPP) with 10 time zone setting as per ISI standards	Per piece	
2	D 2	Supply of Digital Timer with inbuilt contactor (4KWp TO 10 Kwp SPVPP)with 10 time zone setting as per ISI standards setting	Per piece	
3	-	DC Voltmeter Meter for DCDB of solar power plant		
	D 3.1	(0-200)V for (1KW to 6KW)SPVPP	Per piece	
	D 3.2	(0-300)V for (8KW to 15KW)SPVPP	Per piece	
4	-	DC Ammeter		
	D 4.1	75-0-75 for 1KW SPVPP	Per piece	
	D 4.2	150-0-150 for 2KW to 15KW	Per piece	
5	-	Digital AH Meter for DCDB of solar power plant		
	D 5.1	40-80VDC for 1KW-2KW SPVPP	Per piece	
	D 5.2	80-170VDC for 3KW-6KW SPVPP	Per piece	
	D 5.3	100-260VDC for 8KW-15KW SPVPP	Per piece	
6	D 6	High Voltage Class "C" Insulating mat as per IS:15652-2006 3 mm Thickness, ISI marked upto 33KV Grade. Make Honeywell, PPL, Zenith	Mtr.	
7	-	Wall Supported Aluminium Ladder manufactured from high tensile aluminium alloys :-		
	D 7.1	Single ladder closed type 12 Feet Height	Per piece	
	D 7.2	Single ladder Extended type 20 Feet Height	Per piece	
	D 7.3	Folding Plat form Aluminium Ladder 20 Feet Height	Per piece	
	D 7.4	Single Ladder Extended Type 35 Feet Height	Per piece	
8	-	PVC Earth Pit Chamber :-		
	D 8.1	Top dimension 180x180mm, Bottom Dimension 250x250mm, Height 210mm	Per piece	
	D 8.2	Top dimension 230x230mm, Bottom Dimension 320x320mm, Height 230mm	Per piece	
	D 8.3	Top dimension 300x300mm, Bottom Dimension 405x405mm, Height 300mm	Per piece	
9	-	Digital clamp meter ,Fluke,Metravi,Meco		
	D 9	Average, 3 3/4 digitals (4000 Counts), Auto / Manual ranging, 1000V AC/DC & Up to 1000A AC ,55mm Clamp Jaw Size , Capacitance / Diode Continuity /Frequency Testing, Auto Power off / Data hold / Zero Adjustment Make : Fluke or Equivalent	Per piece	
10	-	Digital Earth tester as per specification stated below, Fluke ,Metravi,Meco		

	D 10	3 & 1/2 Digit LCD display with Max Reading 1999, Earth Resistance Ranges of 0.01Ω to 1999Ω, Rechargeable Internal Ni-MH Battery, 4 Wire Soil Resistivity Measurement , Measurement Method-3 terminal & 4 Terminal with test kit Model DET-20 Make : Motwane or Equivalent	Per piece	
11	D 11	Mechanic Tool kit set GSB 550 -Watt Impact drill kit(Blue range,122 pieces) Make: Bosch,Hilti or Equivalent.	Per piece	
12	D 12	TDS Meter for water quality measurement	Per piece	
13	D 13	Digital multi meter 20A SSC Fluke ,Metravi, Meco make	Per piece	
14	D 14	Digital Thermometer for temperature Measurement as per ISI standards Fluke ,Metravi, Meco	Per piece	
15	D 15	Vernier callipers , Mitutoyo make Measuring Range (0-150)MM	Per piece	
16	D 16	Screw guage , Mitutoyo make of equivalent Measuring Range(0-25)MM	Per piece	
17	D 17	Supply of Electrical Rubber Insulating Hand Gloves for Electrical Purposes IS:4770,IEC:60903	P. Pair	
18	D 18	Supply of Helmets with PVC lining as per (IS: 2745-1983),IS:2925	Per piece	
19	D 19	Supply of safety shoe antistatic of any size as per IS:15298	. Pair	
20	D 20	Supply of Digital coating thickness gauge, Measuring Range 6mm, 0.1<20 Microns, 1>20 Microns, Metravi or equivalent make	Per piece	
21	D 21	Supply of crimping tool for crimping of wire Ranging from 01 Sq mm to 16 Sq mm Stanley,Taparia,Bosch or equivalent make	Per piece	
22	D 22	Supply of full body harness with double rope and scaffold hook nylon safety belt for solar dual pump technician as per IS:3521	Per piece	
23	-	DC digital weighing machine with 01 year warranty, ISI standards (NABL certified)		
	D 23.1	50 Kg	Per piece	
	D 23.2	100 Kg	Per piece	
	D 23.3	200 Kg	Per piece	
	D 23.4	300 Kg	Per piece	
24	D 24	Hanging digital weight machine with capacity 50 Kg ISI standards (NABL certified)	Per piece	
25	D 25	MPPT DC Charge controller of capacity 24V/20 Amps of reputate make for solar high mast systems.	Nos.	

Certified that rates quoted above are as per the requirement, specifications, and terms & condition mentioned in the tender document. Above rates are FOR anywhere in the State of Chhattisgarh inclusive of roadworthy packing, loading, unloading, all types of incidental expenses, insurance, duties and any other job required to properly execute the work. The GST payable on the bill produced for payment to CREDA shall be paid in addition to above quoted price as per rate of GST applicable at the time of billing.

(No other cost will be claimed above the price quoted)

Note:-Partial bidding shall be not allowed. Bidder shall have to quote rates for all items.

Signature of Bidder

Name _____

Seal _____

Signature_____

5. ANNEXURE - 01 DRAFT AGREEMENT

CONTRACT AGREEMENT BETWEEN Chief Engineer Chhattisgarh State Renewable Energy Development Agency (CREDA) Raipur AND M/s..... Represented by THIS CONTRACT AGREEMENT against Bid No. 81323/CREDA/HOR/RE-V/ELECTRICAL MATERIAL/2021-22 Dated: 27-08-2021(also referred to as "Service Contract") is made on the XXth day of _____2021.

BETWEEN

- (1) Chief Engineer Chhattisgarh State Renewable Energy Development Agency (CREDA) Raipur a society incorporated under the laws Society Registration Act 1973 , (1973 , Sr. No. 44) (with amendment from time to time) and having its Registered Office at VIP Road Near Energy Education Park, Village- Fundhar, Raipur and (hereinafter called "The Employer" and also referred to as "CREDA")

And

- (2)Represented bya company incorporated under the laws of Companies Act 1956/2013/ Partnership firm/ Proprietorship firm/Consortium (as applicable, with amendment from time to time) and having its Principal place of business at.....and Registered Office at.....hereinafter called "The Contractor" and also referred to as "....."

Whereas the contractor has offered to enter into contract with the said CREDA for the **"Standardization of rates for supply and installation of various fabrication items used in PDN works , PDN civil works for operation and maintenance in CREDA anywhere in the state of Chhattisgarh"**.

Wide Bid No. 81323/CREDA/HOR/RE-V/ELECTRICAL MATERIAL/2021-22 Dated: 27-08-2021on the terms and conditions herein contained and the rates approved by the CREDA (Letter No. dated annexed here to) have been duly accepted and whereas the necessary security deposit shall be furnished in accordance with the provisions of the Bid document and whereas no interest will be claimed on the security deposits.

Now these presents witness and it is hereby agreed and declared by and between parties to these presents as follows -

- 1) The Contractor shall, during the period of this contract, that is to say from to or completion thereof, until this Contract shall be determined by such notice as is hereinafter mentioned, safely carryout, by means of labours employed at his own expenses and by means of tools, implements and equipment etc. to be supplied by him to his labour at his own expenses, for supply of **"supply and installation of various fabrication items used in PDN works , PDN civil works"** as described in Bid documents. (Annexed to the agreement).
- 2) The NIT (Notice Inviting Bid), Corrigendum to NIT, Notices, Bid documents (Qualifying, Technical and Financial), approved rates annexed hereto and such other additional particulars, undertaking, instructions, general conditions of contract, Scope of work, Technical specifications of items/works and Annexures therein, engineering documents, detailed specifications of BOS , so far they relate to the Bid No. 81323/CREDA/HOR/RE-V/ELECTRICAL MATERIAL /2020-21 Dated : 27-08-2021as may be found requisite to be given during execution of the work shall be deemed and taken to be an integral part of the contract and shall also be deemed to be included in the expression "The Agreement or "The Contract "wherever herein used.
- 3) The contractor shall also supply the requisite number of workmen with means & materials as well as tools, appliances, machines, implements, vehicles for transportation, cartage etc. required for the proper execution of work within the time prescribed in the work orders and /or as per the Bid conditions.

- 4) The Engineer in Charge or his authorized representative (s) shall be entitled at all reasonable times to inspect and supervise and test during commissioning. Such inspection will not relieve the eligible bidder from their obligations under this contract.
- 5) Material can be inspected before dispatch or in transit by the authorized representatives of CREDA at the factory at the cost of the eligible bidder, if desired by CREDA. CREDA reserves right to inspect the material at Godowns / Temporary Stores before dispatch and also at works sites.
- 6) CREDA shall deduct TDS for Income Tax, applicable cess on Civil Work etc. under various acts and deposited with the appropriate authority. Costs and taxes before execution of agreement with CREDA so as to ensure tax deposition as per Government Rules accordingly.

7) ELIGIBLE BIDDER'S DEFAULT LIABILITY

CREDA may by written notice of default to the eligible bidder, terminate the contract in circumstances detailed hereunder -

- (a) If in the opinion of the CREDA, the eligible bidder fails to complete the supply/work within the time specified in the supply/work Order or within the period for which extension has been granted by CREDA to the eligible bidder.
- (b) If in the opinion of CREDA, the eligible bidder fails to comply with any of the provisions of this contract.
- (c) In the event of CREDA terminating the contract in whole or in part as provided in paragraph (a) above, CREDA reserves the right to engage another eligible bidder or agency upon such terms and in such a manner as it may deem appropriate and the eligible bidder shall be liable to CREDA for any additional costs or any losses caused to CREDA as may be required for the supply of items and or for penalty as defined under this Bid document until such reasonable time as may be required for the final completion of the work.
- (d) In the event CREDA does not terminate the contract as provided in paragraph (a) the eligible bidder shall continue performance of the contract, in which case he shall be liable to CREDA for penalty for delay as set out in this Bid document until the work is completed.

8) FORCE MAJEURE -

The eligible bidder shall not be liable for any penalty for delay or for failure to perform the contract for reasons of FORCE MAJEURE such as of God, acts of public, enemy, LWE problems, acts of government, cyclone, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes provided that if SI shall submit delay notice with appropriate cause of delay to the CREDA in writing within **15 days** of force majeure. CREDA shall verify the facts and may grant such extension as facts justify. Delay in supply of any accessories of items etc. by the related vendors, to whom the Bidder has placed order, shall also not be treated as force majeure.

9) REJECTION OF WORKS -

In the event of any of the material supplied/work done by the eligible bidder is found defective in material or workman ship or otherwise not in conformity with the requirements of this contract specifications, CREDA shall either reject the material and/or work and advise the eligible bidder to rectify the same. CREDA may impose penalty for such rejection up to the 200% cost of the entire system. Habitual/repeated offenders shall be black listed/debarred to participate in the any Bid/ Activity of CREDA till further orders. The eligible bidder on receipt of such notices shall rectify or replace the defective material and rectify the work free of cost. If the eligible bidder fails to do so CREDA may -

- a) At its option replace or rectify such defective materials and/or work and recover the extra cost so involved from the eligible bidder plus **15%** service charges of the cost of such rectification, from the eligible bidder and/ or terminate the contract for balance work/ supplies with enforcement of penalty as stated above.
- b) Defective materials/workmanship will not be accepted under any conditions and shall be rejected outright without compensation. The eligible bidder shall be liable for any loss/damage sustained by CREDA due to defective work **with enforcement of penalty as stated above.**

10) EXTENSION OF THE TIME -

If the completion of installation is delayed due to any reason beyond the control of the eligible bidder, the eligible bidder shall without delay give notice to the CREDA in writing of his claim for an extension of time. CREDA on receipt of such notice may or may not agree to extend the contract/delivery/completion date of the items/works as may be reasonable but without prejudice to other terms and conditions of the contract.

11) PENALTY FOR DELAY IN COMPLETION OF CONTRACT -

If the eligible bidder fails to complete the assigned work within the schedule time specified in the sanction order or any extension granted there to, CREDA will recover from the bidder as penalty a sum of half percent (0.5%) of the system price excluding GST/Tax for every delayed system per week. For this purpose, the date of taking over shall be reckoned as the date of completion. The total penalty shall not exceed 5% (Five Percent) of the cost.

However, imposition of such penalty shall be discretion of CREDA. This penalty may be decrease, increase or waved off due to various justified reasons on ground with recommendations of field staff on record. Period declared as lockdown or local quarantine /containment zones due to Covid-19 pandemic shall be waived off for the purpose of penalty.

Review of the progress of supply of the electrical items allocated to bidders shall be done time to time by CREDA and if the progress of supply of electrical items is found unsatisfactory, the allocation of entire remaining supply or their part of can be re-allocated to other bidders as per discretion of CREDA.

12) PENALTY DUE FROM THE ELIGIBLE BIDDER-

All costs of damages and delays for which the eligible bidder is liable to the CREDA will be deducted from any money due to the eligible bidder including the security deposit of any project under CREDA.

13) ELIGIBLE SI'S RESPONSIBILITY -

Notwithstanding anything mentioned in the specifications of subsequent approval or acceptance of the items/works by CREDA, if any, the ultimate responsibility for satisfactory performance of the entrusted work shall rest with the eligible bidder. If in any case the eligible bidder does not complete the work as per the Work Orders issued to them then CREDA may take over the task & complete the project at the risk and cost of eligible bidder.

14) RESPONSIBILITY TO RECTIFY THE LOSS AND DAMAGE -

If any loss or damage occurs to the work or any part thereof or materials/plant/equipment's for incorporation therein the period for which the eligible bidder is responsible for the cause thereof or from any cause whatsoever, the eligible bidder shall at his own cost rectify/replace such loss or damage, so that the permanent work confirms in every respect with the provision of the contract to the satisfaction of the Engineer. The eligible bidder shall also be liable for any loss or damage to the work/equipment's occasioned by him in course of any operation carried out to him during performing the contract.

15) RESPONSIBILITY TOWARDS THE WORKMAN OR OUTSIDERS -

- The eligible bidder shall have to take insurance coverage from any authorized Insurance Company against Workmen compensation due under Workmen Compensation Act and submit copy of the insurance document before issuance of Work Order.
- The eligible bidder shall ensure all safety measures during execution and repairs of the work. CREDA, will, in no case be responsible for any accident fatal or non-fatal, caused to any workman or outsider in course of transport or execution or repairs of work.
- All the expenditure including treatment or compensation will be entirely borne by the eligible bidders. The eligible bidder shall also be responsible for any claims of

- the workers including PF, Gratuity, ESI & other legal obligations.
 - Bidder shall have to submit JCCs within **60 days** after supply of items in District Office of CREDA.
- 16)** Contractor shall provide 05 years warranty in supplied items and 01 years warranty in works from the date of supply as per the terms & conditions prescribed in the Bid No. 81323/CREDA/HOR/RE-V/ELECTRICAL MATERIAL/2021 Dated : 27-08-2021)
- 17) **DECLARATION OF CONFLICT OF INTEREST –****
- a. The bidder shall not be permitted to Bid for the work if the section of HO CREDA (responsible for implementation of work) in which his near relative is posted. Furthermore Successful Bidder shall not be given work in the district in which his near relative is posted. Bidder shall also intimate the names of his near relatives working in the CREDA. Bidder shall also intimate the name of persons who are working with him in any capacity and who are near relatives to any employee in CREDA. Any breach of this condition by bidder would render himself liable to be blacklisted for three years and removed from approved list of bidder.
- Note:** - By the term near relatives is meant Wife, Husband, Parents and son, Brother, Sister, Brother-in-law, Father-in-law, and Mother-in-law etc.
- b. Bidder must produce an affidavit (Annexure-03) stating the names of retired/removed employee of CREDA (if any) in his employment who retired /removed within last two years, if in case there is no such person in his employment, his affidavit should clearly state this fact. This affidavit is mandatory, if it is not produced along with the bid, the bid shall be rejected.
- 18)** The contractor shall arrange insurance coverage for the materials and Items/works at his/ for the supply under execution and successful commissioning and subsequent handover to the CREDA. The contractor shall take up insurance or such other measures for the manpower so as to cover the claim for damage arising under workmen's compensation Act and other applicable State/ Central laws. CREDA shall not bear any responsibility on this account.
- 19)** Bidder shall arrange for insurance coverage for Items during warranty. Insurance should cover for damage and theft. In case of such incidence, bidder must replace the lost/damaged part within 7 days.
- 19)** The bidder shall abide by the terms and conditions, rules, guidelines, construction practices, safety precautions etc. stipulated in the Bid document including any correspondence between the bidder and the **CREDA** having bearing on execution of supply/works and payments of supply/works to be done under the contract.
- 20)** The Bidder shall be responsible to follow all the laws including Workmen Compensation Act and all other laws in force & shall be responsible for all the obligations towards labour including EPF, ESI, etc.
- 21)** All the taxes deductible at source as per Acts in vogue shall be recovered by **CREDA** and deposited with the appropriate authorities
- 22)** Contractor agrees to abide by any decision/instruction passed by the appropriate authority under Anti-profiteering rules notified by the state/central government under GST act.
- 23)** Any dispute arising out of the contract shall be subject to the jurisdiction of Hon'ble High Court of Chhattisgarh.

I/We hereby state that we have provided information of our near relatives as stated in the affidavit attached at “Annexure – 03”.

"Herewith everything and anything contained in Bid no. 81323/CREDA/HOR/RE-V/ELECTRICAL MATERIAL/2020-21 Dated: 27-08-2021 is part of this agreement which has been dully signed by both bidder and authorised signatory of CREDA".

In witness whereof the parties present today has hereby entered into agreement.

**Signed & sealed on behalf of the above
Named contractor**

Name:

Designation:

Signed on behalf of CREDA

Name: **Sanjeev Jain**

Designation: **Chief Engineer (RE-V)**

Witness:

1. Name:-.....

Address:-.....

.....

2. Name:.....

Address:-

.....

6.SCHEDULE - I

PART 'A': GENERAL INFORMATION

(Strike off whichever is not applicable. Separate sheets should be used, wherever necessary)

- | | | | |
|------------|---|---|----------------------|
| 01. | Name & Address of the Bidder | : | |
| 02. | Name & Address of the firm/Company etc. | : | |
| | a) Registered office | : | |
| | b) Factory/works address | : | |
| | c) Fax Nos. | : | |
| | d) Telephone / Mobile Nos. | : | |
| | e) Email id | : | |
| 03. | Confirm whether Bidder is Manufacturer | : | Yes/No |
| 04. | Only manufacturer to give following particulars | | |
| | a) Address of factory | : | |
| | b) Year of starting manufacture | : | |
| | c) Whether same/similar materials
Manufactured earlier
(if yes, give reference) | : | |
| | d) Yearly/monthly production capacity | : | |
| | e) Maximum yearly production
Achieved so far | : | |
| 05. | Whether the firm is SSI Unit of
Chhattisgarh State: | : | Yes/No |
| | a) If yes, write registration No. | : | |
| | b) Whether documentary evidence
Regarding registration enclosed | : | |
| | c) Items for registration | : | |
| | d) Period of registration | : | |
| | d) Whether latest copy Competency/
Certificate furnished | : | Yes/No |
| 06. | Whether the firm is 100% owned by | | |
| | a) State Government | : | Yes/No |
| | b) Central Government | : | Yes/No |
| | If yes, Notification/certificate issued from | : | Yes/No |
| | The competent authority to this effect is
Enclosed | | |
| 07. | a) Whether the bidder is old participant
with CREDA | : | Yes/No |
| | b) If yes, whether documentary
Evidence is enclosed. | : | Yes/No |
| 08. | Any other information that bidder may like
to give in order to highlight his bid | : | If yes, give details |

PLACE :

SIGNATURE OF BIDDER

NAME IN FULL

DATE :

DESIGNATION/STATUS

FIRM/COMPANY SEAL

7.SCHEDULE - II

PART 'B' : COMMERCIAL INFORMATION

(Strike off, whichever is not applicable. Separate sheets should be used. Wherever necessary)

- | | | |
|---|---|--|
| 01.i) Earnest Money Details | : | Bank draft/Bankers cheque payable to "CREDA", Raipur |
| ii) Amount of E.M.D. & full details | : | \ |
| iii) If exempted, state whether the bidder is / Fully Owned State/Central Govt. Unit | : | SSI Unit of C.G. |
| iv) Reference of documentary evidence regarding exemption enclosed. | : | Yes/No |
| 02. Whether the offer is valid for 6 months from the date of opening of commercial/technical bid. | : | Yes/No |
| 03. Rate of Sales Tax on the date of bid (exclusive in the rate quoted) | : | |
| 04. DISCOUNT: | | |
| a) Whether any rebate/discount is offered. | : | Yes/No |
| b) If yes, whether the rebate is unconditional/conditional : Rate/amount of rebate/discount | : | Yes/No |
| c) If conditional State condition | : | Yes/No |
| 05. PAYMENT TERMS: | | |
| Whether CREDA's terms of payment is acceptable to Bidder | : | Yes/No |
| 06. COMPLETION PERIOD OF WORK: | | |
| Whether Bidder is agreeing for completion period of work as Specified in the Bid | : | Yes/No |
| 07. PENALTY CLAUSE: | | |
| Whether agreeable to CREDA's Penalty Clause | : | Yes/No |
| 08. Whether agreeable to CREDA's clause of warrantee period : | | Yes/No |
| 09. SECURITY DEPOSIT: | | |
| Whether Security Deposit clause is understood | : | Yes/No |
| 10. Indicate State, Central Sales Tax Registration Number | : | Yes/No |
| | | Central: |
| (Please Note that in case of non-registration with Commercial Tax, Department Purchase Tax as admissible shall be deducted by the Purchaser from the Bills of the supplier) | | |
| 11. Please mention whether rates offered are applicable for part quantities. | : | Yes/No |

PLACE:

SIGNATURE OF BIDDER

DATE:

NAME IN FULL

DESIGNATION/STATUS

FIRM/COMPANY SEAL

8.SCHEDULE - III

PART 'C' : TECHNICAL INFORMATION

(Strike off whichever is not applicable. Separate sheets should be used. Wherever necessary)

01. Whether material offered is exactly as per technical specification : Yes/No
02. Whether the copies of completion certificate received during last 3 years : Yes/No
from other State Nodal Agency or from other Organization for supply
of inverters (if yes, give details) enclosed.
03. Whether pamphlets/technical details literatures along with drawing etc. : Yes/No
furnished with the offer (if yes, give details)
04. Whether the Bidder agrees to furnish material test certificates in : Yes/No
respect of chemical composition and physical properties from Govt./
Govt. approved lab with each batch of supplies.
05. Whether the Bidder has furnished details of manufacturing :Yes/No
equipments and short history of plant (if yes, give details)
06. Whether details of manufacturing process furnished with offer. : Yes/No
(if yes, give details)
07. a) Whether all testing facilities are available. :Yes/No
If so, give details and in case of non-availability of facilities indicate
approved lab available in surrounding areas where tests are proposed to be conducted.

PLACE

SIGNATURE OF BIDDER

DATE

NAME IN FULL

DESIGNATION/STATUS

FIRM/COMPANY

SEAL

9.SCHEDULE - IV

TECHNICAL DEVIATIONS

From,
Bidder Name & Address -

To,
**The CE,
 CREDA, HO,
 Raipur**

Sub – Technical Deviations.

Dear Sir,

The technical deviations & variations to the specifications stipulated in the Bid, for the item quoted are as under –

S.No	Condition and deviation	Clause no of Bid document	Page no of Bid document	Statement of Variation

2. Except aforesaid deviations, the entire order, if placed, on us shall be executed in accordance with your specifications and other conditions. Variation/deviations etc. if found, elsewhere in our offer should not be given any considerations while finalizing the Bid.

PLACE

DATE

SIGNATURE OF BIDDER

NAME IN FULL

DESIGNATION/STATUS

FIRM/COMPANY SEAL

NOTE - Continuation sheet of like size & format may be used as per bidder's requirements and shall be annexed to this schedule.

10.SCHEDULE - V

PAST EXPERIENCE

From :

Bidder's Name & Address -

To,

The CE,

CREDA, HO,

Raipur

Sub – Performance/Past Experience.

Dear Sir,

We furnish herewith the record of our performance and experience as follows -

Sl.No.	Purchaser's Name & Address	Order No. Date	Ordered Quantity	Qty. supplied (Nos.)	Value of Order
--------	-------------------------------	-------------------	---------------------	-------------------------	-------------------

PLACE

SIGNATURE OF BIDDER

DATE

NAME IN FULL

DESIGNATION/STATUS

FIRM/COMPANY SEAL

NOTE - Photocopy of the completion certificate received from other State Agencies/Govt. Undertakings etc. should be enclosed.

11.ANNEXURE – 02

(EXPERIENCE CERTIFICATE ON THE OFFICIAL LETTER HEAD OF CONCERNED GOVERNMENT DEPARTMENT WITH SEAL AND SIGN BY AUTHORIZED SIGNATORY)

Ref. No.....

Date.....

CERTIFICATE OF SUPPLY AND PDN WORKS

This is to certify that **Name of Bidder, Address of Registered Office** has successfully completed the supply/works ofItems/works against various Sanction of Name of Agency at various locations in.....State, as per following details –

Details of Works/Supply	Year	Total Value of work (In Rs.)	Remarks
Total -			

The workmanship and performance of the above Items/work are found satisfactory and are in successful operation.

Seal & Sign
(Authorised Signatory)

12.ANNEXURE – 03

FORMAT FOR THE AFFIDAVIT

(Note: This affidavit should be on a non-judicial stamp paper of Rs. 100/- and shall be attested by Magistrate/Sub-Judge/ Notary Public)

I,.....(Name of the bidder authorized representative of the bidder) son/daughter ofresident of(full address), aforesaid solemnly affirm and state as under :

1. I hereby certify that all the information furnished with the bid submitted in response to notice inviting bid number____/CREDA/HOR/RE-V/ELECTRCAL MATERIAL AND EQUIPMENT /2021-22 DT. 27-08-2021 issued by Chhattisgarh State Renewable Energy Development Agency (CREDA) (authority inviting bids) for supply of various electrical materials (name and identification of work) are true and correct.
2. I hereby certify that I have been authorized by..... (Company name) to sign on their behalf, the bid mentioned in sr.no.1 above. *
3. Information furnished in the bidding documents is correct in all respects to the best of my knowledge and belief.
4. The near relations as per clause 31(A), in CREDA, are not in employment of the firm/company. (Note:-By the term near relatives is meant Wife, Husband, Parents and Son, Brother, Sister, Brother-in-law, Father-in-law, Mother-in-law etc.) (if working mention the name/names)

.....

.....

5. The name of near relative (if any) as per Clause 31(B) who retired/removed within the last two years. (If None, clearly State None)

.....

.....

6. No near relative is working as Financial Accountant in the CREDA. (if working mention the name)

.....

.....

7. No person is working in the company in any capacity, who are near relatives to any Officer in Chhattisgarh State Renewable Energy Development Agency (CREDA) (If working mention the name)

.....

.....

1. Our company/firm/ or otherwise is not under the clarification of ineligibility for corrupt and fraudulent practices by the Central Government, the State Government or any public undertaking, autonomous body, authority by whatever name called under the Central or the State Government. as mention in clause 1(F) of tender document.
2. I hereby authorize the CREDA Officials to get all the documents verified from appropriate sources (s).

Deponent

Place :

Date :

* Not applicable if the bidder is an individual and is signing the bid on his own behalf.

Verification

I..... S/o.....do here by affirm that contents stated in Para 1 to 09 above and contents submitted in technical & financial bid are true to the best of my knowledge and believe and are based on my/our record.

Verified that this date of at (Place).....

Deponent

13.ANNEXURE – 04

BENCHMARK COST FOR ELECTRICAL MATERIALS USED IN PDN WORKS

S.No.	ACDB, DCDB, AJB, MJB used in PDN works during operation and maintenance of solar system	Unit	Benchmark Cost per unit (Excl. GST) In Rs
01	Supply of ACDB suitable for SPVPP (Cap 1 KWp to 3 KWp at 48 Volts DC), Output 230 Volts AC Single Phase with timer and suitable SPD according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	12000
02	Supply of ACDB suitable for SPVPP (Cap 4 KWp to 6KWp at 96 Volts DC) Output 230 Volts AC Single Phase with timer suitable SPD according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	12276
03	Supply of ACDB suitable for SPVPP (Cap 8 KWp to 10 KWp at 120 Volts DC) Output 230 Volts AC Single Phase with timer suitable SPD according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	14000
04	Supply of DCDB suitable for SPVPP (Cap 1 KWp to 3 KWp at 48 Volts DC) according to MNRE Guidelines as per specifications mentioned in drawing”.	Nos	17200
05	Supply of DCDB suitable for SPVPP (Cap 4 KWp to 6 KWp at 96 Volts DC) according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	17300
06	Supply of DCDB suitable for SPVPP (Cap 8 KWp to 10 KWp at 120 Volts DC) according to MNRE Guidelines as per specifications mentioned in drawing.	Nos	19100
07	Supply of Control Panel consisting all features, controls, metering, suitable SPD and Monitoring instruments required for ACDB & DCDB suitable for SPVPP (Cap upto 1 KWp at 24 Volts DC) Output 230 Volts AC Single Phase according to MNRE Guidelines .	Nos	26330
08	Supply of Control Panel consisting all features, controls, metering, suitable SPD and Monitoring instruments required for ACDB & DCDB suitable for SPVPP (Cap 1 KWp to 3 KWp at 48 Volts DC) Output 230 Volts AC Single Phase according to MNRE Guidelines .	Nos	27000
09	Supply of Control Panel consisting all features, controls, metering ,suitable SPD and Monitoring instruments required for ACDB & DCDB suitable for SPVPP (Cap 4 KWp to 6 KWp at 96 Volts DC) Output 230 Volts AC Single Phase according to MNRE Guidelines .	Nos	35000
10	Array junction Box 4 input 1 output with SPD	Nos	5000
11	Array junction Box 6 input 1 output with SPD	Nos	6900
12	Main junction Box 2 input 1 output with necessary protections	Nos	3360

Benchmark cost for electrical materials used in PDN works (Contd.)			
S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
1	Heavy duty multistand wire and cable P.V.C. insulated twisted bright annealed Copper 1100 Volts, IS 694, Size :-	-	-
	(1) 1.0 Sq.mm	Meter	7
	(2) 1.5 Sq.mm	Meter	11
	(3) 2.5 Sq.mm	Meter	16.5
	(4) 4 Sq.mm	Meter	28
	(5) 6 Sq.mm	Meter	40
	(6) 10 Sq.mm	Meter	70
	(7) 16 Sq.mm	Meter	112
	(8) 25 Sq.mm	Meter	175
	(9) 35 Sq.mm	Meter	230
2	Aluminium wire P.V.C. Insulated sheathed and single core cable for working voltage upto 1100 volts, IS 694/1990 size	-	-
	(i) 1/1.40 mm (1.5 sq.mm)	Meter	2.8
	(ii) 1/1.78 mm (2.5 sq.mm)	Meter	4.5
	(iii) 1/2.24 mm (4.0 sq. mm)	Meter	7.78
	(iv) 1/2.76 mm (6.0 sq. mm)	Meter	8
	(v) 1/3.57 mm (10.0 sq. mm)	Meter	15.76
3	Aluminium wire P.V.C. Insulated sheathed and twin core cable for working voltage upto 1100 volts, IS 694/1990 size	-	-
	(i) 1/1.40 mm (1.5 Sq.mm) Solid Conductor	Meter	6.5
	(ii) 1/1.78 mm (2.5 Sq. mm) Solid Conductor	Meter	8
	(iii) 1/2.24 mm (4 Sq. mm) Solid Conductor	Meter	11.5
	(iv) 1/2.76 mm (6Sq. Mm) Solid Conductor	Meter	15
	(v) 1/3.57 mm (10 Sq.mm) Solid Conductor	Meter	37.54
	(vi) 7 / 1.70mm (16 Sq.mm) Standard Conductor	Meter	40.92
4	ACSR wire for A.C. distribution ISI make	-	-
	(1) 10 Sq. mm	Meter	24.5
	(2) 16 Sq. mm	Meter	30.1
5	Power cable - Unarmoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one two core	-	-
	(1) 1.5 Sq.mm	Meter	25
	(2) 2.5 Sq.mm	Meter	27
	(3) 4 Sq.mm	Meter	35
	(4) 6 Sq.mm	Meter	45
	(5) 10 Sq.mm	Meter	55
	(6) 16 Sq.mm	Meter	63
	(7) 25 Sq.mm	Meter	88
6	Power cable - Unarmoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one three core	-	-
	(1) 1.5 Sq.mm	Meter	23.5
	(2) 2.5 Sq.mm	Meter	37.5
	(3) 4 Sq.mm	Meter	55
	(4) 6 Sq.mm	Meter	55

S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
	(5) 10 Sq.mm	Meter	80
	(6) 16 Sq.mm	Meter	100
	(7) 25 Sq.mm	Meter	135
7	Power cable - Unarmoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one four core	-	-
	(1) 1.5 Sq.mm	Meter	41
	(2) 2.5 Sq.mm	Meter	49
	(3) 4 Sq.mm	Meter	60
	(4) 6 Sq.mm	Meter	60
	(5) 10 Sq.mm	Meter	90
	(6) 16 Sq.mm	Meter	130
	(7) 25 Sq.mm	Meter	160
8	Power cable - Armoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one two core	-	-
	(1) 1.5 Sq.mm	Meter	55
	(2) 2.5 Sq.mm	Meter	62
	(3) 4 Sq.mm	Meter	75
	(4) 6 Sq.mm	Meter	85
	(5) 10 Sq.mm	Meter	100
	(6) 16 Sq.mm	Meter	120
	(7) 25 Sq.mm	Meter	130
9	Power cable - Armoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one three core	-	-
	(1) 1.5 Sq.mm	Meter	80
	(2) 2.5 Sq.mm	Meter	85
	(3) 4 Sq.mm	Meter	94.6
	(4) 6 Sq.mm	Meter	100
	(5) 10 Sq.mm	Meter	135
	(6) 16 Sq.mm	Meter	147.4
	(7) 25 Sq.mm	Meter	180
10	Power cable - Armoured with Aluminum Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, part one four core	-	-
	(1) 1.5 Sq.mm	Meter	79
	(2) 2.5 Sq.mm	Meter	95
	(3) 4 Sq.mm	Meter	108.9
	(4) 6 Sq.mm	Meter	110
	(5) 10 Sq.mm	Meter	150
	(6) 16 Sq.mm	Meter	170
	(7) 25 Sq.mm	Meter	190
11	Power cable - Unarmoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, two core	-	-
	(1) 1.5 Sq.mm	Meter	38
	(2) 2.5 Sq.mm	Meter	64
	(3) 4 Sq.mm	Meter	75
	(4) 6 Sq.mm	Meter	120
	(5) 10 Sq.mm	Meter	155
	(6) 16 Sq.mm	Meter	200
	(7) 25 Sq.mm	Meter	315

S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
12	Power cable - Unarmoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, three core	-	-
	(1) 1.5 Sq.mm	Meter	51
	(2) 2.5 Sq.mm	Meter	80
	(3) 4 Sq.mm	Meter	98
	(4) 6 Sq.mm	Meter	150
	(5) 10 Sq.mm	Meter	210
	(6) 16 Sq.mm	Meter	280
	(7) 25 Sq.mm	Meter	395
13	Power cable - Unarmoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, four core	-	-
	(1) 1.5 Sq.mm	Meter	70
	(2) 2.5 Sq.mm	Meter	95
	(3) 4 Sq.mm	Meter	140
	(4) 6 Sq.mm	Meter	210
	(5) 10 Sq.mm	Meter	290
	(6) 16 Sq.mm	Meter	400
	(7) 25 Sq.mm	Meter	495
14	Power cable - Armoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, two core	-	-
	(1) 1.5 Sq.mm	Meter	90
	(2) 2.5 Sq.mm	Meter	95
	(3) 4 Sq.mm	Meter	116
	(4) 6 Sq.mm	Meter	170
	(5) 10 Sq.mm	Meter	245
	(6) 16 Sq.mm	Meter	140
	(7) 25 Sq.mm	Meter	470
15	Power cable - Armoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988,three core	-	-
	(1) 1.5 Sq.mm	Meter	110
	(2) 2.5 Sq.mm	Meter	145
	(3) 4 Sq.mm	Meter	170
	(4) 6 Sq.mm	Meter	240
	(5) 10 Sq.mm	Meter	360
	(6) 16 Sq.mm	Meter	500
	(7) 25 Sq.mm	Meter	725
16	Power cable - Armoured with Copper Conductor PVC insulated PVC Sheathed (Heavy Duty) as per IS:1554/1988, four core	-	-
	(1) 1.5 Sq.mm	Meter	138
	(2) 2.5 Sq.mm	Meter	175
	(3) 4 Sq.mm	Meter	225
	(4) 6 Sq.mm	Meter	300
	(5) 10 Sq.mm	Meter	405
	(6) 16 Sq.mm	Meter	630
	(7) 25 Sq.mm	Meter	980

S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
17	<p>Supply of 1100V Grade L.T. Aerial Bunched Cable having three Power Core & One Neutral-Cum-Messenger Core of stranded compacted circular Aluminium Black coloured XLPE insulated & Core identification by ridges, one, two and three & four respectively. One Street Lighting Core of stranded, compacted Circular Aluminium Conductor, Black coloured XLPE insulated without any identification mark. Messenger-Cum Neutral Wire should be of stranded compacted Circular Aluminium Alloy Conductor conforming to IS 8130/1984, IS-398(Part-IV)/1979 and IS-14255/1995 with upto date amendments, if any</p> <p>Note:-Offer for Ariel bunch cables should cover required accessories(Anchor clamp, Eyehook with suspension clamp assembly, Pole Clamp, Insulation piercing connectors with cover or PG connector with insulation cover, Water proof pre-insulated hexagonal compression connectors lugs etc) with details of dimension ,materials and provisional quantity per 500 Mtr of power distribution line</p>		
	(1) 3x10 + 1x6 + 1x10 sq.mm	Meter	Will be compared with prevailing market rate
	(2) 3x25 + 1x16 + 1x25 sq.mm.	Meter	Will be compared with prevailing market rate
	(3) 3x35 + 1x16 + 1x25 sq.mm.	Meter	Will be compared with prevailing market rate
	(4) 3x50 + 1x16 + 1x35 sq.mm.	Meter	Will be compared with prevailing market rate
	(5) 3x70 + 1x16 + 1x50 sq.mm.	Meter	Will be compared with prevailing market rate
18	Supply of flat submersible cable as per ISI standards		
	(1) 2.5 Sq mm 3 core	Meter	Will be compared with prevailing market rate
	(2) 4 Sq mm 3 core	Meter	Will be compared with prevailing market rate

Benchmark cost for electrical materials used in PDN works (Contd.)			
S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
1	LED Street lighting Luminaire ,0.90<PF,IP65 & 66 protection,External voltage surge protection,copper Earth wire conductor 2 feet,Separate Heat Sink,Separate driver compartment(>30Watt Luminaries) Make Havells or equivalent	-	-
	9W	Per piece	880
	15W	Per piece	1290
	18W	Per piece	1290
	25W	Per piece	1725
	30W	Per piece	1800
	40W	Per piece	1900
	60W	Per piece	2950
	85W	Per piece	7499
	90W	Per piece	4850
	110W	Per piece	9000
2	Distribution Box with provision for MCB & HRC Fuse of IS: 13032 (with Neutral Link, Single Phase)	-	-
	(1) Two way suitable for 2 x 16Amp at 240V	Per piece	250
	(2) Three way suitable for 4 x 16Amp at 240V	Per piece	280
	(3) Four way suitable for 4 x 16Amp at 240V	Per piece	310
	(4) Two way suitable for 4 x 63Amp at 240V	Per piece	510
	(5) Three way suitable for 4 x 63Amp at 240V	Per piece	575
	(6) Four way suitable for 4 x 63Amp at 240V	Per piece	580
3	DC MCB of IS 8828 - 1996 make, Single Pole of Capacity (Without enclosure)	-	-
	(1) 2.5 Amp	Per piece	320
	(2) 6Amp	Per piece	280
	(3) 10Amp	Per piece	280
	(4) 16Amp	Per piece	280
	(5) 20Amp	Per piece	280
	(6) 25Amp	Per piece	280
	(7) 32Amp	Per piece	280
	(8) 63Amp	Per piece	330
	(9) 100 Amp	Per piece	470
4	DC MCB of IS 8828 - 1996 make, Double Pole of Capacity (Without enclosure)	-	-
	(1) 2.5 Amp	Per piece	730
	(2) 6Amp	Per piece	571
	(3) 10Amp	Per piece	571
	(4) 16Amp	Per piece	571
	(5) 20Amp	Per piece	571
	(6) 25Amp	Per piece	571
	(7) 32Amp	Per piece	571
	(8) 63Amp	Per piece	920
	(9) 100 Amp	Per piece	1400

S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
5	A. C. MCB, IS 8828 -1996, Single Pole (without enclosure)	-	-
	(i) 1 A	Per piece	Will be compared with prevailing market rate
	(ii) 2.5 A	Per piece	110
	(iii) 6 A	Per piece	120
	(iv) 10 A	Per piece	120
	(v) 16 A	Per piece	120
	(vi) 20 A	Per piece	120
	(vii) 25 A	Per piece	120
	(viii) 32 A	Per piece	120
	(ix) 63 A	Per piece	340
	(x) 100 A	Per piece	840
6	Change over switch, 230Volt, Make- Havells , HPL or equivalent.	Nos	-
	(1) 16Amp	Nos.	845
	(2) 40Amp	Nos	999
	(3) 60Amp	Nos	1350
7	Change over switch Double Pole, 230Volt, Make- Havells , HPL or equivalent.	Nos	-
	(1) 16Amp	Nos.	900
	(2) 40Amp	Nos	1300
	(3) 60Amp	Nos	1951
8	Change Over Switch 63 Amp. 4 pole ISI make	Per piece	4000
9	M.C.B. Enclosure Steel sheet powder coated suitable for	-	-
	(i) 02 Nos. MCB.	Per piece	240
	(ii) 03 Nos. MCB.	Per piece	280
	(iii) 04 Nos. MCB.	Per piece	280
	(iv) 08 Nos. MCB.	Per piece	594
	(v) 12 Nos. MCB.	Per piece	745
10	M.C.B. Enclosure of Plastic body, suitable for	-	-
	(i) 02 Nos. MCB (SP).	Per piece	85
	(ii) 03 Nos. MCB(SP).	Per piece	90
	(iii) 04 Nos. MCB(SP).	Per piece	90
	(iv) 08 Nos. MCB(SP).	Per piece	280
	(v) 12 Nos. MCB(SP).	Per piece	490
11	HRC Fuse of ISI make	-	-
	(i) 6 Amp	Per piece	40
	(ii) 10Amp	Per piece	40
	(iii) 16 Amp	Per piece	40
	(iv) 20 Amp	Per piece	40
	(v) 32 Amp	Per piece	40
	(vii) 50 Amp	Per piece	55
	(viii) 63 Amp	Per piece	75
	(xi) 100 Amp	Per piece	40
12	H.R.C. Fuse holder 32 Amp.	Per piece	80
13	H.R.C. Fuse holder 63 Amp.	Per piece	150
14	Junction box unbreakable thermo plastic. IP 65 protection, suitable for outdoor application, fire retardant up to 750°C chemical resistance suitable for given size and terminal of Hensel make	-	-
	(i) 88 x 88 x 53 – 2.5 Sq. mm with terminal	Per piece	250
	(ii) 98 x 98 x 61 – 4 Sq. with terminal suitable for one in two out	Per piece	350

Benchmark cost for electrical materials used in PDN works (Contd.)			
S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
	(iii) 167 x 125 x 82 with terminal 6/10 Sq.mm	Per piece	870
	(iv) 200 x 160 x 98 with terminal five in one out of 16/25 Sq.mm	Per piece	1100
15	M.S. Junction box Size 150mm x 200mm x100 mm. (18 Swg. Plate)	Per piece	400
16	M.S. Junction box Size 250mm x 200mm x100 mm. (18 Swg. Plate)	Per piece	600
17	Electronic Energy Meter, ISI make, Single Phase, Operating Voltage 120-300V, 45-55Hz of following ratings:	-	-
	(1) 10-40A	per piece	650
	(2) 10-60A	per piece	750
18	Electronic Energy Meter, ISI make, Three Phase, Operating Voltage 120-440V, 45-55Hz of following ratings:	-	-
	(1) 10-40A	Per piece	1400
	(2) 10-60A	Per piece	1500
19	single module multi function Energy Meter can measure volts, Amp, ,Kwh and Kw, ,	per piece	-
	(1) 20 Amp	per piece	1600
	(2) 30 Amp.	per piece	1600
20	Ceilling Rose 2 point, ISI make,	Per piece	11
21	Switch 6A Flash Type ISI Make	Per piece	8
22	(1) Socket 6 Amp, 3 pin. ISI make,	Per piece	18
	(1) Socket 6 Amp, 5 pin. ISI make,	Per piece	19
23	(1) PVC Cable clip (Kaju) Size 6mm	Per 100 pieces	30
	(2) PVC Cable clip (Kaju) 12 mm	Per 100 pieces	50
	(3) PVC Cable clip (Kaju) 20 mm	Per 100 pieces	140
	(4) PVC Cable clip (Kaju) 25 mm	Per 100 pieces	240
24	(1) PVC Albow 20mm	Per piece	3
	(2) PVC Albow 25mm	Per piece	4
25	(1) PVC Tee 20mm	Per piece	3
	(2) PVC Tee 25mm	Per piece	4
26	Power Plug 16 Amp. SS Combined with box	Per piece	120
27	3 Pin top, 6 Amp., ISI make,	Per piece	30
	3 Pin top, 16 Amp., ISI make,	Per piece	40
28	Connector-Bakelite	Per piece	-
	(1) 30 Amp, 500 V,2 way	Per piece	10
	(2) 30 Amp, 500 V,5 way	Per piece	25
	(3) 60 Amp, 500 V, 4 way Open type	Per piece	80
	(4) 60 Amp, 500 V, 4 Close type	per piece	80
29	PVC Casing &Caping, ISI make,	-	-
	Size – (1) 20 mm.	Per mtr.	12
	(2) 25 mm.	Per mtr.	17
	(3) 32 mm	Per mtr.	22
30	P.V.C. Pipe, ISI, ConsealedMedium type	-	-
	(1) 20 mm	Per mtr.	15
	(2) 25 mm	Per mtr.	20
31	PVC Conduit Special Pipe – ISI make	-	-
	Size – (1) 20 mm	Per mtr.	20

	(2) 25 mm	Per mtr.	25
	(3) 32mm	Per mtr.	30
S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
	P.V.C. Junction Box, ISI Make,	-	-
32	Size (1) 20 mm.	Per piece	5
	(2) 25 mm.	Per piece	8
	P.V.C., Bend ISI Make, Long	-	-
33	Size (1) 20 mm.	Per piece	4
	(2) 25 mm.	Per piece	5
	Board Sun mica, 6 mm thick teak wood	-	-
34	Size: 300 mm x 450 mm x 50 mm	Per piece	150
	Size: 200 mm x 150 mm x 50 mm	Per piece	28
	Board PVC	-	-
35	Size: 100 mm x 100 mm x 50 mm	Per piece	28
	Size: 175 mm x 100 mm x 50 mm	Per piece	35
	Size: 200 mm x 150 mm x 50 mm		60
	Cycle Insulator Porcelain.	-	-
36	Size: 62 mm x 50 mm	Per piece	12
	(1) P.V.C. Ring Insulator, Heavy duty Size: 12 mm x 12 mm with inner dia 10 mm weather proof (white).	Per 100 piece	50
37	(2) P.V.C. Ring Insulator, Heavy duty Size: 20 mm x 20 mm with inner dia 16 mm weather proof (white).	Per 100 piece	100
	(3) P.V.C. Ring Insulator, Heavy duty Size: 26 mm x 26 mm with inner dia 22 mm weather proof (white).	Per 100 piece	150
38	Rawl Grip. 10 no. (PVC)	Per 100 pieces	20
	G.I. Wire	-	-
39	(1) 8 no.	Per kg	65
	(2) 10 no	Per kg	65
	(3) 12 no.	Per kg	65
	(4) 16 no.	Per kg	80
	(5) 18 no.	Per kg	80
	Service Pipe with G.I.Pipe 'B' Class, Length 10 feet	-	-
40	Size : (1) 19 mm.	Per piece	400
	(2) 25 mm.	Per piece	550
	Service Pipe with G.I.Pipe 'B' Class, Length 7 feet	-	-
41	Size : (1) 19 mm.	Per piece	300
	(2) 25 mm.	Per piece	450
	M.S. Clamp suitable for service pipe.	-	-
42	(1) 19 mm.	Per piece	10
	(2) 25 mm.	Per piece	15
43	Bombay Nails Size : 38mm x 50 mm	Per kg	80
44	TATA Nails Size: 38mm x 50 mm	Per kg	80
	M.S. Nut Bolt with washer	-	-
45	10 mm x 150 mm	Per piece	10
	Screw natal fold		-
46	(1) 35 mm x 8 no.	Per 100 piece	45
	(2) 75 mm x 10 no.	Per 100 piece	130
	(3) 100 mm x 10 no.	Per 100 piece	160
47	(1) Machine Screw 3/16 x 25 mm with nut and washer	Per piece	1
	(2) Machine Screw 3/16 x 38 mm with nut and washer	Per piece	1.5
48	Steel Screw.	-	-

	13 mm x 6 no.	Per 100 piece	40
	19 mm x 6 no.	Per 100 piece	45
49	P.V.C. Square Box.	-	-
	Size: 100 mm x 100 mm	Per piece	5
50	P.V.C. Insulate Tape.	-	-
	19 mm x 8 mts. ISI Make.	Per piece	8
51	Copper Plate.	-	-
	300 mm x 300 mm x 03 mm Approx. 3kg	Per piece	1400
52	Copper wire 10 no.	Per kg	550
53	Danger Plate of MS	-	-
	Size: 125 mm x 200 mm	Per piece	40
	Copper Lugs, Ring /Pin Type, ISI suitable for	-	-
54	(i) 04 mm Wire	Per piece	3
	(ii) 06 mm Wire	Per piece	4
	(iii) 10 mm Wire	Per piece	4
	(iv) 16 mm Wire	Per piece	10
	(v) 25 mm Wire	Per piece	12
55	Wall Mounted Fan 400mm (Bajaj/ Havells/Crompten)	Per piece	1600
56	Ceiling Fan 1200mm (Bajaj/ Havells/Crompten)	Per piece	1000
57	Exhaust Fan 300mm (Bajaj/ Havells/Crompten)	Per piece	1300
58	Exhaust Fan 225mm (Bajaj/ Havells/Crompten)	Per piece	1200
59	Fan Regulator Step Type 5 Step (Socket Type)	Per piece	150
60	(1) Indoor AC LED Tubelight 9 Watt/2 feet	Per piece	225
	(2) Indoor AC LED Tubelight 18Watt/4 feet	Per piece	315
61	LED Bulb 9 Watt	Per piece	120
	Surge Protecting Devices (SPD) as per ISI specification & IEC standards	-	-
62	(i) 20 KA	Per piece	5000
	(ii) 40KA	Per piece	6230
	(iii) 60KA	Per piece	12500
	(iv) 100KA	Per piece	16500
	(v) 150KA	Per piece	30400
	(vi) 200KA	Per piece	42000
	SPD Enclosures suitable for above with standard material as per ISI specification & IEC standards	-	-
63	(i) 20 KA	Per piece	850
	(ii) 40KA	Per piece	850
	(iii) 60KA	Per piece	850
	(iv) 100KA	Per piece	2250
	(v) 150KA	Per piece	2250
	(vi) 200KA	Per piece	2250

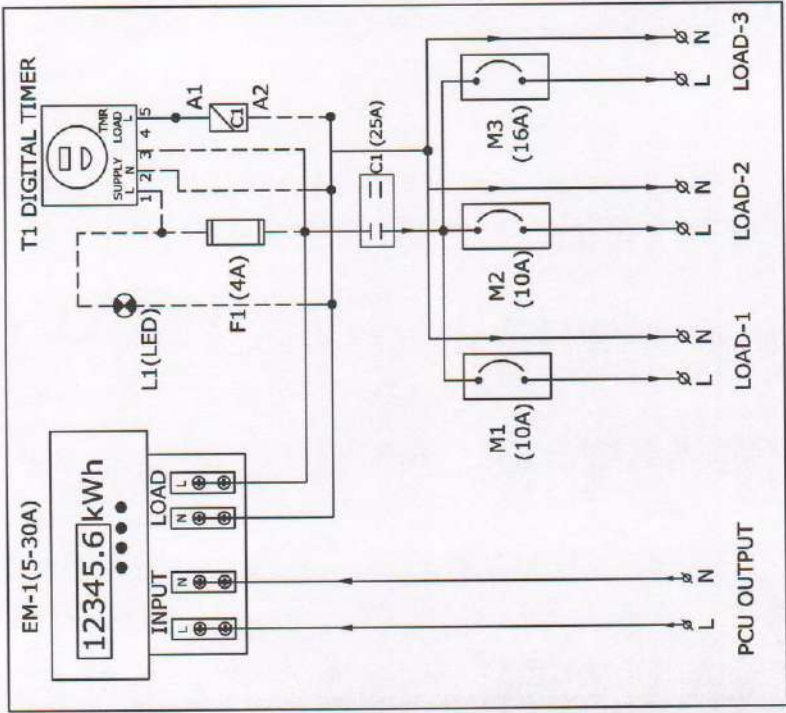
Benchmark cost for electrical materials used in PDN works (Contd.)			
S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
64	Battery bank Stand of FRP material as per ISI standards (Sintex or equivalent make) for	-	-
	01 KW/24V(Battery Config.: -12V/150AH, 2 Nos) SPVPP	Nos	4500
	01 KW/48V(Battery Config.: -12V/150AH, 4 Nos) SPVPP	Nos	6300
	02 KW/48V(Battery Config.: -02V/300AH, 24 Nos) SPVPP	Nos	16200
	03 KW/48V(Battery Config.: -02V/400AH, 24 Nos) SPVPP	Nos	16200
	04 KW/48V(Battery Config.: -02V/300AH, 24 Nos) SPVPP	Nos	16200
	05 KW/96V(Battery Config.: -02V/400AH, 48 Nos) SPVPP	Nos	26100
	06 KW/96V(Battery Config.: -02V/400AH, 48 Nos) SPVPP	Nos	26100
	08 KW/120V(Battery Config.: -02V/600AH, 60 Nos) SPVPP	Nos	39425
	10 KW/120V(Battery Config.: -02V/600AH, 60 Nos) SPVPP	Nos	39425
	50W/240V(Battery Config.: -02V/800AH, 120 Nos) SPVPP	Nos	63000
66	Supply of Lighting Arrestor as per MNRE specification for solar power plant	-	-
	Radius of protection -20 Mtr	Nos	31000
	Radius of protection-72 Mtr	Nos	40000
67	By pass Diode as per ISI standards for solar modules	-	-
	6 Amp	Nos	110
	10 Amp	Nos	138
	12 Amp	Nos	158
	15 Amp	Nos	185
	20 Amp	Nos	225
68	MC4 connector of capacity 20 Amp as per ISI standards	Nos	145
69	Multistand Copper cored Tinned DC cable for panel interconnection size 4 Sq mm	Mtr	70

Benchmark cost for electrical materials used in PDN works (Contd.)			
S. No.	Description of Item	Unit	Benchmark Cost per unit (Excl. GST) In Rs
1	Supply of Digital Timer with inbuilt contactor (up to 3Kw SPVPP) with 10 time zone setting as per ISI standards	Per piece	8250
2	Supply of Digital Timer with inbuilt contactor (4KWp TO 10 Kw SPVPP)with 10 time zone setting as per ISI standards setting	Per piece	14600
3	DC Voltmeter Meter for DCDB of solar power plant		
	(0-200)V for (1KW to 6KW)SPVPP	Per piece	1080
	(0-300)V for (8KW to 15KW)SPVPP	Per piece	1260
4	DC Ammeter		
	75-0-75 for 1KW SPVPP	Per piece	1000
	150-0-150 for 2KW to 15KW	Per piece	1200
5	Digital AH Meter for DCDB of solar power plant		
	40-80VDC for 1KW-2KW SPVPP	Per piece	7750
	80-170VDC for 3KW-6KW SPVPP	Per piece	9700
	100-260VDC for 8KW-15KW SPVPP	Per piece	11600
6	High Voltage Class "C" Insulating mat as per IS:15652-2006 3 mm Thikness,ISI marked upto 33KV Grade.MakeHoneywell,PPL,Zenith	Mtr.	Will be compared with prevailing market rate
7	Wall Supported Aluminium Ladder manufactured from high tensile aluminium alloys :-		
	Single ladder closed type 12 Feet Height	Per piece	Will be compared with prevailing market rate
	Single ladder Extended type 20 Feet Height	Per piece	
	Folding Plat form Aluminium Ladder 20 Feet Height	Per piece	
	Single Ladder Extended Type 35 Feet Height	Per piece	
8	PVC Earth Pit Chamber :-		
	Top dimension 180x180mm, Bottom Dimension 250x250mm,	Per piece	Will be compared with prevailing market rate
	Top dimension 230x230mm, Bottom Dimension 320x320mm,	Per piece	
	Top dimension 300x300mm, Bottom Dimension 405x405mm,	Per piece	
9	Digital clamp meter ,Fluke,Metravi,Meco		
	Average, 3 3/4 digitals (4000 Counts), Auto / Manual ranging, 1000V AC/DC & Up to 1000A AC ,55mm Clamp Jaw Size , Capacitance / Diode Continuity /Frequency Testing, Auto Power off / Data hold / Zero Adjustment Make : Fluke or Equivalent	Per piece	Will be compared with prevailing market rate
10	Digital Earth tester as per specification stated below, Fluke ,Metravi,Meco		
	3 & 1/2 Digit LCD display with Max Reading 1999, Earth Resistance Ranges of 0.01Ω to 1999Ω, Rechargeable Internal Ni-MH Battery, 4 Wire Soil Resistivity Measurement , Measurement Method-3 terminal & 4 Terminal with test kit Model DET-20 Make : Motwane or Equivalent	Per piece	Will be compared with prevailing market rate
11	Mechanic Tool kit set GSB 550 -Watt Impact drill kit(Blue range,122 pieces) Make: Bosch,Hilti or Equivalent.	Per piece	Will be compared with prevailing market rate

12	TDS Meter for water quality measurement	Per piece	Will be compared with prevailing market rate
13	Digital multi meter 20A SSC Fluke ,Metravi,Meco make	Per piece	Will be compared with prevailing market rate
14	Digital Thermometer for temperature Measurement as per ISI standards Fluke ,Metravi,Meco	Per piece	Will be compared with prevailing market rate
15	Vernier callipers ,Mitutoyo make Measuring Range (0-150)MM	Per piece	Will be compared with prevailing market rate
16	Screw guage ,Mitutoyo make of equivalent Measuring Range(0-25)MM	Per piece	Will be compared with prevailing market rate
17	Supply of Electrical Rubber Insulating Hand Gloves for Electrical Purposes IS:4770,IEC:60903	Per Pair	Will be compared with prevailing market rate
18	Supply of Helmets with PVC lining as per (IS: 2745-1983),IS:2925	Per piece	Will be compared with prevailing market rate
19	Supply of safety shoe antistatic of any size as per IS:15298	Per piece	Will be compared with prevailing market rate
20	Supply of Digital coating thickness gauge, Measuring Range 6mm, 0.1<20 Microns, 1>20 Microns,Metravi or equivalent make	Per piece	Will be compared with prevailing market rate
21	Supply of crimping tool for crimping of wire Ranging from 01 Sq mm to 16 Sq mm Stanley,Taparia,Bosch or equivalent make	Per piece	Will be compared with prevailing market rate
22	Supply of full body harness with double rope and scaffold hook nylon safety belt for solar dual pump technician as per IS:3521	Per piece	Will be compared with prevailing market rate
23	DC digital weighing machine with 01 year warranty, ISI standards (NABL certified)		
23.1	50 Kg	Per piece	Will be compared with prevailing market rate
23.2	100 Kg	Per piece	Will be compared with prevailing market rate
23.3	200 Kg	Per piece	Will be compared with prevailing market rate
23.4	300 Kg	Per piece	Will be compared with prevailing market rate
D 24	Hanging digital weight machine with capacity 50 Kg ISI standards (NABL certified)	Per piece	Will be compared with prevailing market rate
D 25	MPPT DC Charge controller of capacity 24V/20 Amps of reputate make for solar high mast systems.	Nos.	Will be compared with prevailing market rate

Section-05
Drawing of
ACDB,DCDB,AJB,MJB

CIRCUIT DIAGRAM



NOTE:
• — POWER CABLES
• - - CONTROL CABLES

BILL OF MATERIALS

SLNO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	EM-1	DIGITAL ELECTRONIC ENERGY METER (KWH) 530A	1	No	L&T / SECURE
2	F1	FUSE LINK 4amp	1	No	REPUTED
3	T1	DIGITAL PROGRAMMABLE TIMER WITH RTC	1	No	FRONTIER / L&T / REPUTED
4	C1	CONTACTOR - 3P, AC - A12/3C-10	1	No	ABB / L&T
5	L1	POWER 'ON' LAMP (LED) 230V AC, GREEN COLOR	1	No	TEKNIK / VASHNO / REPUTED
6	M1, M2	1 POLE MCB 10A, 230VAC	2	No	SCHNEIDER / ABB / CAS
7	M3	1 POLE MCB 16A, 230VAC	1	No	SCHNEIDER / ABB / CAS
8	MAINS & PCU	CABLE GLAND PG - 21	2	No	JIGO / CONNECTWELL / HENSEL / OBO
9	FEEDERS	CABLE GLAND PG - 16	3	No	JIGO / CONNECTWELL / HENSEL / OBO
10	MAINS & PCU	TERMINAL BLOCKS UK-10	04	No	DECA / PHOENIX / ELMEX
11	FEEDERS	TERMINAL BLOCKS UK-10	06	No	DECA / PHOENIX / ELMEX
12	TERMINALS ACCESSORIES	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS CABLES COPPER BUS BAR POWER CABLE 450/75MM ² CONTROL CABLE 1.500MM	14	No	DECA / PHOENIX / ELMEX
13	----		01	LOT	RR KABEL/FINOLE/EQUIVALENT LAPP

ENCLOSURE DETAILS

01	REPUTED
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LABEL: - 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF BOX OF SUITABLE POWDER COATED METAL CASING. ONE FEEDER PER PHASE SHALL BE PROVIDED IN ACDB WITH MCB OF SUITABLE CAPACITY INSTALLED AT EACH FEEDER IN THE ACDB. ONE ELECTRONIC ENERGY METER, ISI MAKE, SINGLE / THREE PHASE, OF GOOD QUALITY SHALL ALSO BE INSTALLED IN ACDB SUITABLE PLACED TO MEASURE THE CONSUMPTION OF POWER FROM SPV POWER PLANT. PROPER RATING MCB SHALL BE INSTALLED AT EVERY FEEDER (IN CASE OF SINGLE PHASE OUTPUT ALSO, THERE SHALL BE THREE FEEDERS) TO PROTECT FEEDERS FROM THE SHORT CIRCUIT CURRENT AS PER THE REQUIREMENT OF THE SITE & INSTRUCTIONS OF CREDA. A SEPARATE DEDICATED FEEDER FROM CONVENTIONAL GRID LINE TO PCU AS WELL AS ACDB SHOULD ALSO BE INSTALLED, IF REQUIRED AS PER CREDA'S INSTRUCTION. A SEPARATE CHANGE OVER SWITCH OF PROPER RATING SHOULD ALSO BE SUITABLY INSTALLED IN THE ACDB TO ISOLATE THE EXISTING CONNECTED LOAD FROM THE SOLAR SYSTEM & CATER THE POWER TO THE EXISTING LOAD FROM CONVENTIONAL POWER (GRID), IN CASE OF EMERGENCY. ACDB SHOULD BE CONNECTED BETWEEN PCU & LOAD. SEPARATE ELECTRONIC ENERGY METERS SHOULD BE INSTALLED FOR INCOMING AND OUTGOING CIRCUITS OF ACDB FOR SPVPPS OF CAPACITY MORE THAN 1 KWP.

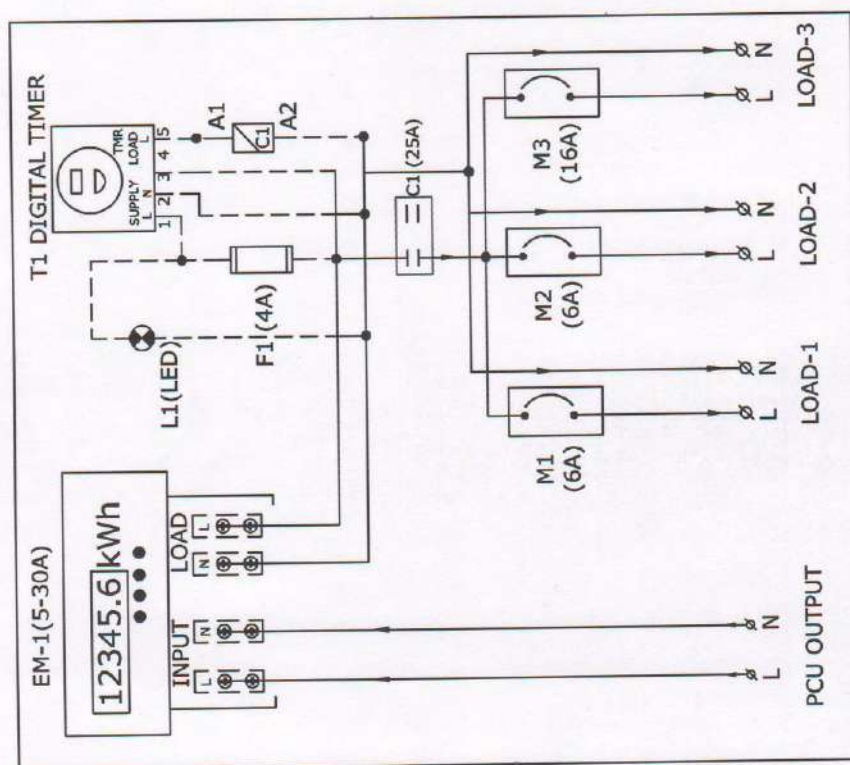


Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)



AC DISTRIBUTION PANEL (ACDB)
3KW (RURAL ELECTRIFICATION)

CIRCUIT DIAGRAM



NOTE:

- POWER CABLES
- - - - - CONTROL CABLES

BILL OF MATERIALS

S/NO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	EM-1	DIGITAL ELECTRONIC ENERGY METER (KWH) 5-30A	1	No	LAT / SECURE
2	F1	FUSE LINK 4Amps	1	No	REPUTED
3	T1	DIGITAL PROGRAMMABLE TIMER WITH RTC	1	No	FRONTIER / LAT / REPUTED
4	C1	CONTACTOR - 3P, AC - A13-30-10	1	No	ABB / LAT
5	L1	POWER ON LAMP (LED) 230V AC, GREEN COLOR	1	No	TEKNIC / VAISHNO / REPUTED
6	M1, M2	1 POLE MCB 6A, 230VAC	2	Nos	SCHNEIDER / ABB / C&S
7	M3	1 POLE MCB 16A, 230VAC	1	No	SCHNEIDER / ABB / C&S
8	MAINS & PCU	CABLE GLAND PG-21	2	Nos	JIGO / CONNECTWELL / HENSEL / OBO
9	FEEDERS	CABLE GLAND PG-16	3	Nos	JIGO / CONNECTWELL / HENSEL / OBO
10	MAINS & PCU	TERMINAL BLOCKS UK6	04	Nos	DECA / PHOENIX / ELMEX
11	FEEDERS	TERMINAL BLOCKS UK6	06	Nos	DECA / PHOENIX / ELMEX
12	TERMINALS ACCESSORIES	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS	14	Nos	DECA / PHOENIX / ELMEX
13	....	CABLES / COPPER BUS BAR * POWER CABLE 4SQMM * CONTROL CABLE 1.5SQMM	01	LOT	RR KABELFINO/EQUIVALENT

ENCLOSURE DETAILS

ITEM	DETAILS
01	<ul style="list-style-type: none"> DIMENSION : 400 X 400 X 115 MM (TYPICAL) THICKNESS : 1.2 MM COATING SHADE : RAL 7032(SIMENS GREY) COATING THICKNESS : 80 MICRONS FINISHING : POWDER COATING CABLE ENTRY : BOTTOM MOUNTING : WALL / FLOOR MOUNTING WITH FASTENERS

LABEL : - 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF BOX OF SUITABLE POWDER COATED METAL CASING. ONE FEEDER PER PHASE SHALL BE PROVIDED IN ACDB WITH MCB OF SUITABLE CAPACITY INSTALLED AT EACH FEEDER IN THE ACDB. ONE ELECTRONIC ENERGY METER, ISI MAKE, SINGLE / THREE PHASE, OF GOOD QUALITY SHALL ALSO BE INSTALLED IN ACDB SUITABLE PLACED TO MEASURE THE CONSUMPTION OF POWER FROM SPV POWER PLANT. PROPER RATING MCB SHALL BE INSTALLED AT EVERY FEEDER (IN CASE OF SINGLE PHASE OUTPUT ALSO, THERE SHALL BE THREE FEEDERS) TO PROTECT FEEDERS FROM THE SHORT CIRCUIT CURRENT AS PER THE REQUIREMENT OF THE SITE & INSTRUCTIONS OF CREDA. A SEPARATE DEDICATED FEEDER FROM CONVENTIONAL GRID LINE TO PCU AS WELL AS ACDB SHOULD ALSO BE INSTALLED, IF REQUIRED AS PER CREDA'S INSTRUCTION. A SEPARATE CHANGE OVER SWITCH OF PROPER RATING SHOULD ALSO BE SUITABLY INSTALLED IN THE ACDB TO ISOLATE THE EXISTING CONNECTED LOAD FROM THE SOLAR SYSTEM & CATER THE POWER TO THE EXISTING LOAD FROM CONVENTIONAL POWER (GRID), IN CASE OF EMERGENCY. ACDB SHOULD BE CONNECTED BETWEEN PCU & LOAD. SEPARATE ELECTRONIC ENERGY METERS SHOULD BE INSTALLED FOR INCOMING AND OUTGOING CIRCUITS OF ACDB FOR SPVPPS OF CAPACITY MORE THAN 1 KWP.



Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)



**AC DISTRIBUTION PANEL (ACDB)
2KW (RURAL ELECTRIFICATION)**

CIRCUIT DIAGRAM					BILL OF MATERIALS				
SLNO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE				
1	EM - 1	DIGITAL ELECTRONIC ENERGY METER (KWH) 5-10A	1	No	L&T / SECURE				
2	F1	FUSE LINK 4Amps	1	No	REPUTED				
3	T1	DIGITAL PROGRAMMABLE TIMER WITH RTC	1	No	FRONTIER / L&T / REPUTED				
4	C1	CONTACTOR - 3P, AC - A1230-10	1	No	ABB / L&T				
5	L1	POWER 'ON' LAMP (LED) 230V AC, GREEN COLOR	1	No	TEKNIC / VAISHNO / REPUTED				
6	M1, M2	1 POLE MCB 6A, 230VAC	2	Nos	SCHNEIDER / ABB / C&S				
7	M3	1 POLE MCB 10A, 230VAC	1	No	SCHNEIDER / ABB / C&S				
8	MAINS & PCU	CABLE GLAND PG - 21	2	Nos	JIGO / CONNECTWELL / HENSEL / OBO				
9	FEEDERS	CABLE GLAND PG - 16	3	Nos	JIGO / CONNECTWELL / HENSEL / OBO				
10	MAINS & PCU	TERMINAL BLOCKS UK6	04	Nos	DECA / PHOENIX / ELMEX				
11	FEEDERS	TERMINAL BLOCKS UK6	06	Nos	DECA / PHOENIX / ELMEX				
12	TERMINALS ACCESSORIES	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS CABLES / COPPER BUS BAR POWER CABLE 4SQMM CONTROL CABLE 1.5SQMM	14	Nos	DECA / PHOENIX / ELMEX				
13	----		01	LOT	RR KABELFINOLEX/EQUIVALENT				

CIRCUIT DIAGRAM

NOTE:

- POWER CABLES
- - - - - CONTROL CABLES

ENCLOSURE DETAILS

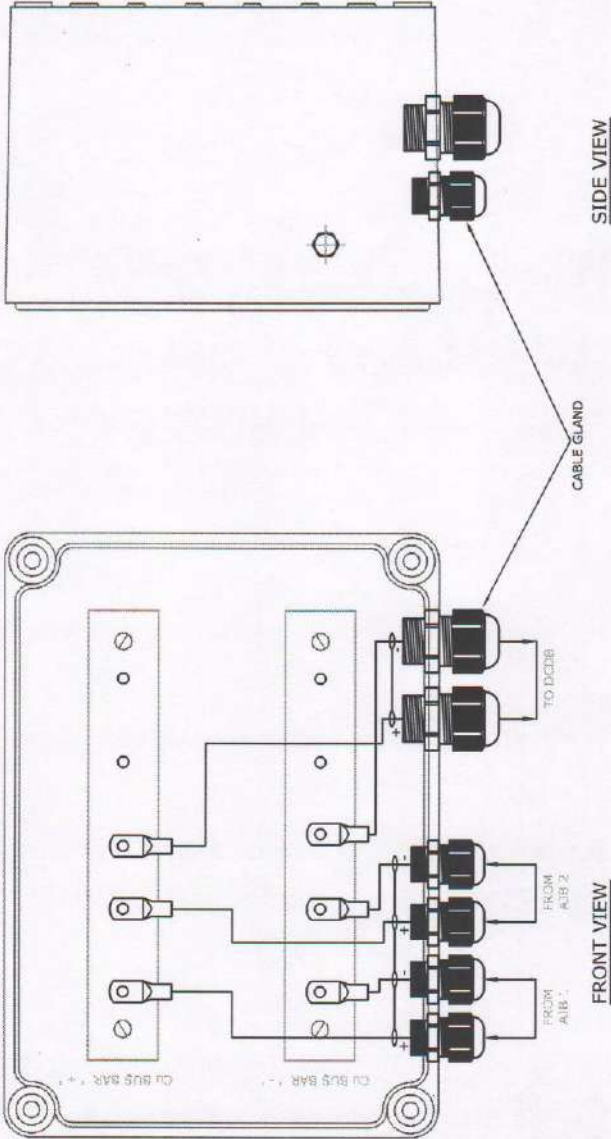
- DIMENSION : 400 X 400 X 115 MM (TYPICAL)
- THICKNESS : 1.2 MM
- COATING SHADE : RAL 7032(SIMENS GREY)
- COATING THICKNESS : 60 MICRONS
- FINISHING : POWDER COATING
- CABLE ENTRY : BOTTOM
- MOUNTING : WALL / FLOOR MOUNTING WITH FASTENERS

DESCRIPTION

THIS SHALL CONSIST OF BOX OF SUITABLE POWDER COATED METAL CASING. ONE FEEDER PER PHASE SHALL BE PROVIDED IN ACDB WITH MCB OF SUITABLE CAPACITY INSTALLED AT EACH FEEDER IN THE ACDB. ONE ELECTRONIC ENERGY METER, ISI MAKE, SINGLE / THREE PHASE, OF GOOD QUALITY SHALL ALSO BE INSTALLED IN ACDB SUITABLE PLACED TO MEASURE THE CONSUMPTION OF POWER FROM SPV POWER PLANT. PROPER RATING MCB SHALL BE INSTALLED AT EVERY FEEDER (IN CASE OF SINGLE PHASE OUTPUT ALSO, THERE SHALL BE THREE FEEDERS) TO PROTECT FEEDERS FROM THE SHORT CIRCUIT CURRENT AS PER THE REQUIREMENT OF THE SITE & INSTRUCTIONS OF CREDA. A SEPARATE DEDICATED FEEDER FROM CONVENTIONAL GRID LINE TO PCU AS WELL AS ACDB SHOULD ALSO BE INSTALLED, IF REQUIRED AS PER CREDA'S INSTRUCTION. A SEPARATE CHANGE OVER SWITCH OF PROPER RATING SHOULD ALSO BE SUITABLY INSTALLED IN THE ACDB TO ISOLATE THE EXISTING CONNECTED LOAD FROM THE SOLAR SYSTEM & CATER THE POWER TO THE EXISTING LOAD FROM CONVENTIONAL POWER (GRID). IN CASE OF EMERGENCY, ACDB SHOULD BE CONNECTED BETWEEN PCU & LOAD. SEPARATE ELECTRONIC ENERGY METERS SHOULD BE INSTALLED FOR INCOMING AND OUTGOING CIRCUITS OF ACDB FOR SPVPS OF CAPACITY MORE THAN 1 KWP.

AC DISTRIBUTION PANEL (ACDB)
1KW (RURAL ELECTRIFICATION)

MJB 2 INPUT 1 OUTPUT



BILL OF MATERIALS				
SLNO	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	INDUSTRIAL GRADE TINNED COPPER BUSBAR	02	No	REPUTED
2	ABS IP65 ENCLOSURE (280(L)x190(W)x130(H)mm)	01	No	HENSEL/TRIBOX/REPUTED
3	IP65 CABLE GLANDS	01	LOT	JACOB/TRIBOX/REPUTED

MOUNTING ACCESSORIES				
SLNO	DESCRIPTION	QTY	UNIT	MAKE
1	CHEESE HEAD M8x30mm WITH PLAIN WASHER AND NUT SS304	04	Nos.	REPUTED



Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)



MJB 2 INPUT 1 OUTPUT

CIRCUIT DIAGRAM

BILL OF MATERIALS					
SLNO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	F1	HRC FUSE BASE 160A FUSE LINK 150A, DC RATED	01	No	HPL/C&S/INDOASIAN
2	F2	FUSE LINK 4A	01	No	REPUTED
3	M1	MCCB 125A, 2/3POLE, DC RATED	01	No	C&S/ABB/SCHNEIDER
4	M2	MCCB 150A, 2/3POLE, DC RATED	01	No	C&S/ABB/SCHNEIDER
5	SW1	10A COS ROTARY SWITCH	01	No	TEKNIC/VAISHNO
6	SH1	SHUNT 150A/75mV	01	No	EIC/RISHAB
7	MT1	DC ANALOG VOLT METER 0-300V, SIZE 96 X 96mm	01	No	EIC/RISHAB
8	MT2	DC ANALOG AMMETER METER 150A-150A, SIZE 96 X 96mm	01	No	EIC/RISHAB
9	MT3	DIGITAL CUMULATIVE CH/DIS AH METER OPERATING VOLTAGE 100-260VDC	01	No	EIC/RISHAB/COUNTRON/REPUTED
10	SOLAR	CABLE GLAND AKM 31	04	Nos	HENSEL/JIGOTRINITY
11	BATTERY	CABLE GLAND AKM 35	04	Nos	HENSEL/JIGOTRINITY
12	SOLAR & BATTERY	TERMINAL BLOCKS (STRIP) 150A	01	LOT	PHOENIX/ELMEX
13	SOLAR & BATTERY	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS	01	LOT	30/REPUTED
14	---	CABLES (COPPER BUS BAR) * POWER CABLE 25SQMM * CONTROL CABLE 1.5SQMM	01	LOT	RR KABEL/FNOLEX/EQUIVALENT

ENCLOSER DETAILS

<ul style="list-style-type: none"> DIMENSION : 400 X 400 X 165 MM (TYPICAL) THICKNESS : 1.2 MM COATING SHADE : RAL 7032 (SIEMENS GREY) COATING THICKNESS : 60 MICRONS FINISHING : POWDER COATING CABLE ENTRY : BOTTOM MOUNTING : WALL / FLOOR MOUNTING WITH FASTENERS 	REPUTED
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DESCRIPTION

THIS SHALL CONSIST OF SUITABLE POWDER COATED METAL CASING, IN THIS BOX A SEPARATE ARRANGEMENT WHICH SHALL CONSIST OF MCCBS OF SUITABLE SPECIFICATIONS & WHICH CAN WITHSTAND RESPECTIVE FLOW OF CURRENT, WITH THE PURPOSE OF PROVIDING THE OPTION FOR ISOLATING THE BATTERY BANK & SPV ARRAYS SHOULD BE MADE. THERE SHALL BE COPPER BUS BARS OF SUITABLE RATING, PROPER RATING HRC FUSE & MCCB/ISOLATOR FOR DC APPLICATION SHOULD BE SUITABLY INSTALLED IN DCDB AS BATTERY BANK ISOLATOR, BEST QUALITY AH METER HAS TO BE INSTALLED TO MEASURE THE CUMULATIVE CHARGING & DISCHARGING STATUS OF BATTERY BANK.

LABEL :-

1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
 2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)

DC DISTRIBUTION PANEL (DCDB)

10KW

BILL OF MATERIALS				
S/NO	CRT REF	ITEM DESCRIPTION	QTY	UNIT
1	F1	HRC FUSE BASE 100A FUSE LINK 125A DC RATED	01	No
2	F2	FUSE LINK 4A	01	No
3	M1	MCCB 125A, 23POLE, DC RATED	01	No
4	M2	MCCB 150A, 23POLE, DC RATED	01	No
5	SW1	10A COS ROTARY SWITCH	01	No
6	SH1	SHUNT 150A/75mV	01	No
7	MT1	DC ANALOG VOLT METER 0-150/75mV, SIZE 96 X 96mm	01	No
8	MT2	DC ANALOG AMMETER METER 150-0-150A, SIZE 96 X 96mm	01	No
9	MT3	DIGITAL CUMULATIVE CH/DIS AH METER OPERATING VOLTAGE 100- 250VDC	01	No
10	SOLAR	CABLE GLAND AKM 21	04	No
11	BATTERY	CABLE GLAND AKM 32	04	No
12	SOLAR & BATTERY	TERMINAL BLOCKS (STRIP) 150A	01	LOT
13	SOLAR & BATTERY	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS	01	LOT
14	...	CABLES (COPPER BUS BAR • POWER CABLE 25SQMM • CONTROL CABLE 1.5SQMM	01	LOT

ENCLOSURE DETAILS

- DIMENSION : 400 X 400 X 165 MM (TYPICAL)
- THICKNESS : 1.2 MM
- COATING SHADE : RAL 7032(SIMENS GREY)
- FINISHING : POWDER COATING
- CABLE ENTRY : BOTTOM
- MOUNTING : WALL / FLOOR MOUNTING WITH FASTENERS

LABEL :

- 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE I.D
- 2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF SUITABLE POWDER COATED METAL CASING. IN THIS BOX A SEPARATE ARRANGEMENT WHICH SHALL CONSIST OF MCCBS OF SUITABLE SPECIFICATIONS & WHICH CAN WITH-STAND RESPECTIVE FLOW OF CURRENT, WITH THE PURPOSE OF PROVIDING THE OPTION FOR ISOLATING THE BATTERY BANK & SPV ARRAYS SHOULD BE MADE. THERE SHALL BE COPPER BUS BARS OF SUITABLE RATING. PROPER RATING HRC FUSE & MCCB/ISOLATOR FOR DC APPLICATION SHOULD BE SUITABLY INSTALLED IN DCDB AS BATTERY BANK ISOLATOR. BEST QUALITY AH METER HAS TO BE INSTALLED TO MEASURE THE CUMULATIVE CHARGING & DISCHARGING STATUS OF BATTERY BANK.

CIRCUIT DIAGRAM

NOTE:

- 8KW SYSTEM VOLTAGE (120V) :100-260VDC
- POWER CABLES
- CONTROL CABLES

DC DISTRIBUTION PANEL (DCDB)

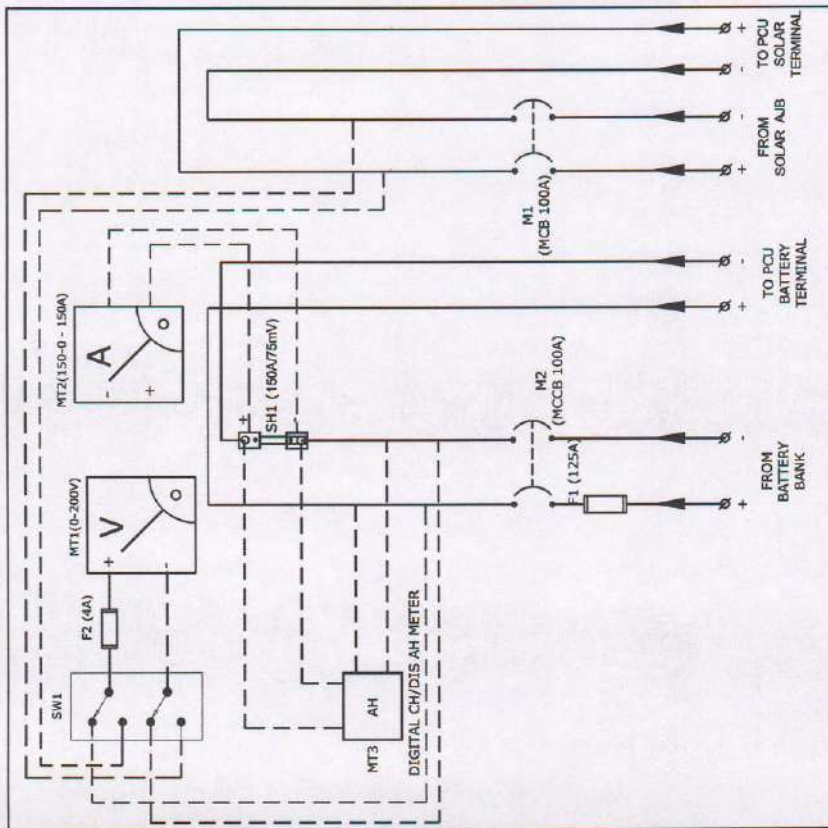
8KW

Chhattisgarh State Renewable Energy Development Agency

(Department of Energy, Govt. of Chhattisgarh)

CREDA

CIRCUIT DIAGRAM



NOTE:

- 3KW SYSTEM VOLTAGE (48V) : 40-85VDC
- 6KW SYSTEM VOLTAGE (96V) : 80-170VDC
- POWER CABLES
- CONTROL CABLES

BILL OF MATERIALS				
SLNO	CKT REF	ITEM DESCRIPTION	QTY	UNIT
1	F1	HRC FUSE BASE 160A FUSE LINK 125A DC RATED	01	No
2	F2	FUSE LINK 4A	01	No
3	M1	MCB 100A, 2POLE, DC RATED	01	No
4	M2	MCCB 100A/20POLE, DC RATED	01	No
5	SW1	10A COS ROTARY SWITCH	01	No
6	SH1	SHUNT 150A/75mV	01	No
7	MT1	DC ANALOG VOLT METER 0-200V, SIZE 96 X 96mm	01	No
8	MT2	DC ANALOG AMMETER METER 150A/0-150A, SIZE 96 X 96mm	01	No
9	MT3	DIGITAL CUMULATIVE CH/DIS AH METER OPERATING VOLTAGE 40-170VDC	01	No
10	SOLAR & BATTERY	CABLE GLAND AKW 21 & 32	06	Nos
11	SOLAR & BATTERY	TERMINAL BLOCKS (STRIP) 150A	01	LOT
12	SOLAR & BATTERY	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS	01	LOT
13	...	CABLES / COPPER BUS BAR • POWER CABLE 16SQMM • CONTROL CABLE 1.5SQMM	01	LOT

ENCLOSER DETAILS

01	REPUTED
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LABEL :- 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF SUITABLE POWDER COATED METAL CASING. IN THIS BOX A SEPARATE ARRANGEMENT WHICH SHALL CONSIST OF MCCBS OF SUITABLE SPECIFICATIONS & WHICH CAN WITHSTAND RESPECTIVE FLOW OF CURRENT, WITH THE PURPOSE OF PROVIDING THE OPTION FOR ISOLATING THE BATTERY BANK & SPV ARRAYS SHOULD BE MADE. THERE SHALL BE COPPER BUS BARS OF SUITABLE RATING. PROPER RATING HRC FUSE & MCCB/ISOLATOR FOR DC APPLICATION SHOULD BE SUITABLY INSTALLED IN DCDB AS BATTERY BANK ISOLATOR. BEST QUALITY AH METER HAS TO BE INSTALLED TO MEASURE THE CUMULATIVE CHARGING & DISCHARGING STATUS OF BATTERY BANK.



Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)

DC DISTRIBUTION PANEL (DCDB)
3KW & 6KW

BILL OF MATERIALS				
S/NO	CKT REF	ITEM DESCRIPTION	QTY	UNIT
1	F1	HRC FUSE BASE 100A/FUSE LINK (3A) DC RATED	01	No
2	F2	FUSE LINK 4A	01	No
3	M1	MCB 50A, 2POLE, DC RATED	01	No
4	M2	MCB 125A, 2POLE, DC RATED	01	No
5	SW1	10A CO3 ROTARY SWITCH	01	No
6	SH1	SHUNT 150A/75mV	01	No
7	MT1	DC ANALOG VOLT METER 0-200V, SIZE 96 X 96mm	01	No
8	MT2	DC ANALOG AMMETER METER 150-0-150A, SIZE 96 X 96mm	01	No
9	MT3	DIGITAL CUMULATIVE CH/DIS AH METER OPERATING VOLTAGE 40- 170VDC	01	No
10	SOLAR & BATTERY	CABLE GLAND AKM 35	06	Nos
11	SOLAR & BATTERY	TERMINAL BLOCKS (STRIP) 150A	01	LOT
12	SOLAR & BATTERY	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS	01	LOT
13	...	CABLES /COPPER BUS BAR • POWER CABLE 16SQMM • CONTROL CABLE 1.5SQMM	01	LOT
REPUTED				
RR KABEL/FINOLEX/EQUIVALENT				

ENCLOSER DETAILS

01

- DIMENSION : 400 X 400 X 185 MM (TYPICAL)
- THICKNESS : 1.2 MM
- COATING SHADE : RAL 7032(SIMENS GREY)
- FINISHING : POWDER COATING
- CABLE ENTRY : BOTTOM
- MOUNTING : WALL / FLOOR MOUNTING WITH FASTENERS

LABEL :- 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF SUITABLE POWDER COATED METAL CASING, IN THIS BOX A SEPARATE ARRANGEMENT WHICH SHALL CONSIST OF MCCBS OF SUITABLE SPECIFICATIONS & WHICH CAN WITHSTAND RESPECTIVE FLOW OF CURRENT, WITH THE PURPOSE OF PROVIDING THE OPTION FOR ISOLATING THE BATTERY BANK & SPV ARRAYS SHOULD BE MADE. THERE SHALL BE COPPER BUS BARS OF SUITABLE RATING, PROPER RATING HRC FUSE & MCCB/ISOLATOR FOR DC APPLICATION SHOULD BE SUITABLY INSTALLED IN DCDB AS BATTERY BANK ISOLATOR. BEST QUALITY AH METER HAS TO BE INSTALLED TO MEASURE THE CUMULATIVE CHARGING & DISCHARGING STATUS OF BATTERY BANK.

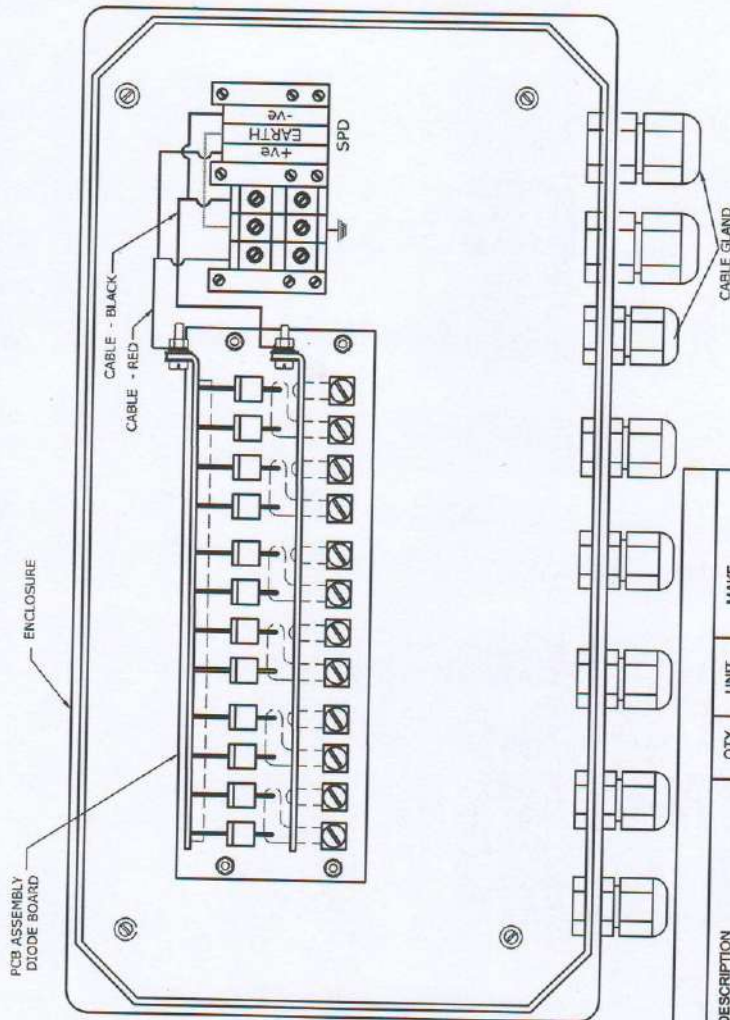
CIRCUIT DIAGRAM

The circuit diagram illustrates the internal wiring of the DC distribution panel. It shows a solar panel input on the left, passing through a switch (SW1) and a fuse (F2) to a main busbar. From this busbar, the circuit splits into two main paths: one leading to a battery bank and another to a load. The battery bank path includes a fuse (F1), a main circuit breaker (M1), and a shunt (SH1) for metering. The load path includes a fuse (F1) and a main circuit breaker (M2). Various meters (MT1, MT2, MT3) are connected to monitor voltage, current, and cumulative charge/discharge. The diagram also shows connections for solar terminals and battery terminals.

NOTE:

- 2KW SYSTEM VOLTAGE (48V) :40-85VDC
- 4KW & 5KW SYSTEM VOLTAGE (96V) :80-170VDC
- POWER CABLES
- CONTROL CABLES

DC DISTRIBUTION PANEL (DCDB)
2KW,4KW & 5KW

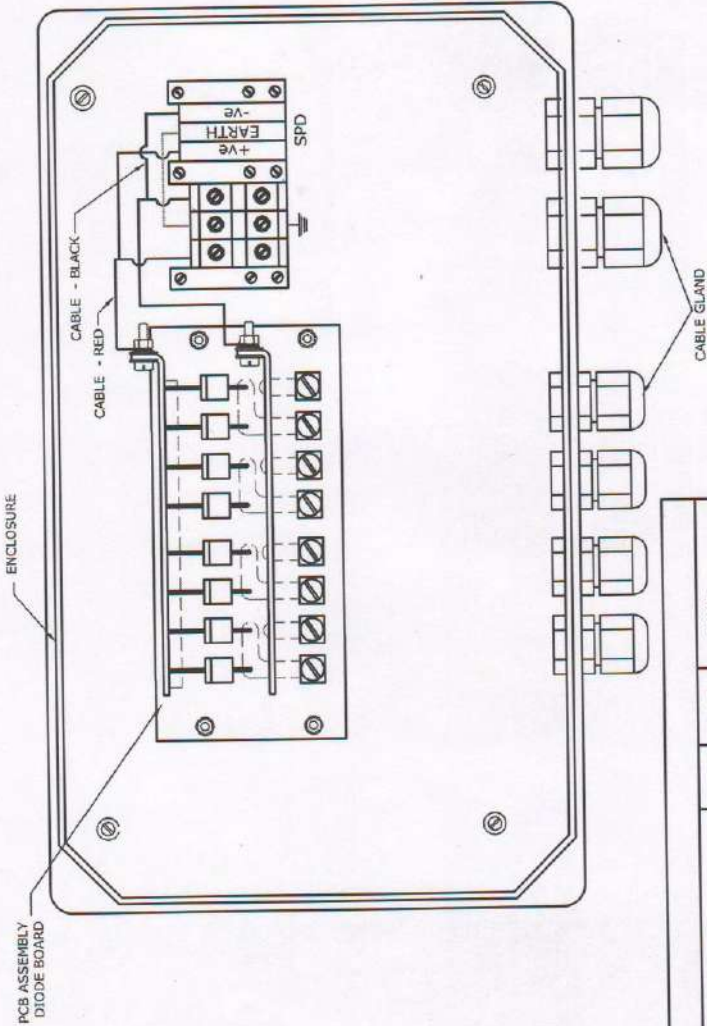


BILL OF MATERIALS					
SLNO	ITEM DESCRIPTION	QTY	UNIT	MAKE	
1	DIODE PCB BOARD 1000V DC, 20 A REVERSE BLOCKING DIODE WITH NECESSARY BUSBAR ARRANGEMENT	01	No	REPUTED	
2	SPD 1000VDC TYPE 2, ARRESTING CAPACITY TO 40KA	01	Nos	OSOPHONIWI SCHNIIDER/REPUTED	
3	ABS IP65 ENCLOSURE (280(L)x190(W)x130(H)mm (TYP.))	01	No	HENSEL/TRIBOX/FIBOX /REPUTED	
4	IP65 CABLE GLANDS	01	LOT	JACOBITRIBOX /REPUTED	
5	COPPER TERMINAL BLOCKS FOR INPUT AND OUTPUT TERMINATIONS	01	LOT	PHOXIX/REPUTED	

MOUNTING ACCESSORIES				
SLNO	DESCRIPTION	QTY	UNIT	MAKE
1	CHEESE HEAD M6x30mm WITH PLAIN WASHER AND NUT SS304	04	Nos.	REPUTED

AJB 6 INPUT 1 OUTPUT

AJB 4 INPUT 1 OUTPUT



BILL OF MATERIALS

SLNO	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	DIODE PCB BOARD 1000V DC, 20 A REVERSE BLOCKING DIODE WITH NECESSARY BUSBAR ARRANGEMENT	01	No	REPUTED
2	SPD 1000VDC TYPE 2, ARRESTING CAPACITY TO 40KA	01	Nos	OBO/PHOENIX/ SCHNIDER/REPUTED
3	ABS IP65 ENCLOSURE (180(L)x180(W)x100(H)mm) TYPICAL DIMENSIONS	01	No	HENSEL/TRIBOX/FIBOX /REPUTED
4	IP65 CABLE GLANDS	01	LOT	JACOBI/TRIBOX /REPUTED
5	COPPER TERMINAL BLOCKS FOR INPUT AND OUTPUT TERMINATIONS	01	LOT	PHOENIX/REPUTED

MOUNTING ACCESSORIES

SLNO	DESCRIPTION	QTY	UNIT	MAKE
1	CHEESE HEAD M5x30mm WITH PLAIN WASHER AND NUT SS304	04	Nos.	REPUTED

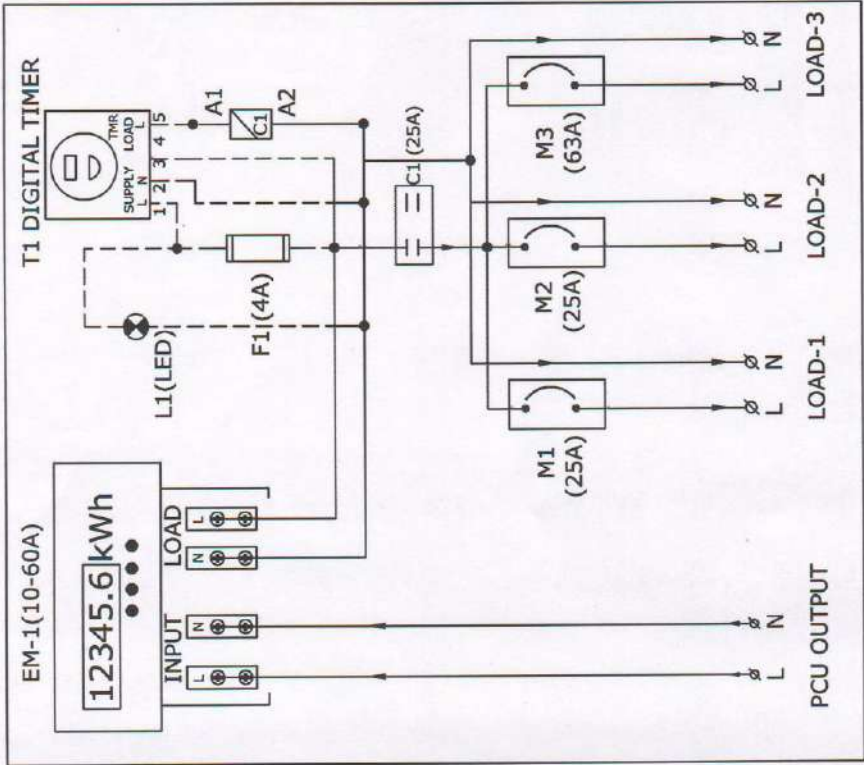


Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)



AJB 4 INPUT 1 OUTPUT

CIRCUIT DIAGRAM



NOTE:

- POWER CABLES
- - - CONTROL CABLES

BILL OF MATERIALS					
SLNO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	EM - 1	DIGITAL ELECTRONIC ENERGY METER (kWh) 10-60A	1	No	L&T / SECURE
2	F1	FUSE LINK 4amps	1	No	REPUTED
3	T1	DIGITAL PROGRAMMABLE TIMER WITH RTC	1	No	FRONTIER / L&T & REPUTED
4	C1	CONTACTOR - 3P, AC - A12-30-10	1	No	ABB / L&T
5	L1	POWER ON LAMP (LED) 230V AC, GREEN COLOR	1	No	TEKNIC / VAISHNO / REPUTED
6	M1, M2	1 POLE MCB 25A, 230VAC	2	Nos	SCHNEIDER / ABB / C&S
7	M3	1 POLE MCB 63A, 230VAC	1	No	SCHNEIDER / ABB / C&S
8	MAINS & PCU	CABLE GLAND PG - 21	2	Nos	JIGO / CONNECTWELL / HENSEL / OBO
9	FEEDERS	CABLE GLAND PG - 16	3	Nos	JIGO / CONNECTWELL / HENSEL / OBO
10	MAINS & PCU	TERMINAL BLOCKS UK16	04	Nos	DECA / PHOENIX / ELMEX
11	FEEDERS	TERMINAL BLOCKS UK16	06	Nos	DECA / PHOENIX / ELMEX
12	TERMINALS ACCESSORIES	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS	14	Nos	DECA / PHOENIX / ELMEX
13	....	CABLES: COPPER BUS BAR • POWER CABLE 10SQMM • CONTROL CABLE 1.5SQMM	01	LOT	RR KABEL/FINOLEX/EQUIVALENT LAPP

ENCLOSURE DETAILS

- DIMENSION : 400 X 400 X 115 MM (TYPICAL)
- THICKNESS : 1.2 MM
- COATING SHADE : RAL 7032(SIMENS GREY)
- COATING THICKNESS : 60 MICRONS
- FINISHING : POWDER COATING
- CABLE ENTRY : BOTTOM
- MOUNTING : WALL / FLOOR MOUNTING WITH FASTENERS

LABEL : - 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF BOX OF SUITABLE POWDER COATED METAL CASING. ONE FEEDER PER PHASE SHALL BE PROVIDED IN ACDB WITH MCB OF SUITABLE CAPACITY INSTALLED AT EACH FEEDER IN THE ACDB. ONE ELECTRONIC ENERGY METER, ISI MAKE, SINGLE / THREE PHASE, OF GOOD QUALITY SHALL ALSO BE INSTALLED IN ACDB SUITABLE PLACED TO MEASURE THE CONSUMPTION OF POWER FROM SPV POWER PLANT. PROPER RATING MCB SHALL BE INSTALLED AT EVERY FEEDER (IN CASE OF SINGLE PHASE OUTPUT ALSO, THERE SHALL BE THREE FEEDERS) TO PROTECT FEEDERS FROM THE SHORT CIRCUIT CURRENT AS PER THE REQUIREMENT OF THE SITE & INSTRUCTIONS OF CREDA. A SEPARATE DEDICATED FEEDER FROM CONVENTIONAL GRID LINE TO PCU AS WELL AS ACDB SHOULD ALSO BE INSTALLED, IF REQUIRED AS PER CREDA'S INSTRUCTION. A SEPARATE CHANGE OVER SWITCH OF PROPER RATING SHOULD ALSO BE SUITABLY INSTALLED IN THE ACDB TO ISOLATE THE EXISTING CONNECTED LOAD FROM THE SOLAR SYSTEM & CATER THE POWER TO THE EXISTING LOAD & LOAD. SEPARATE ELECTRONIC ENERGY METERS SHOULD BE INSTALLED FOR INCOMING AND OUTGOING CIRCUITS OF ACDB FOR SPVPPS OF CAPACITY MORE THAN 1 KWP.

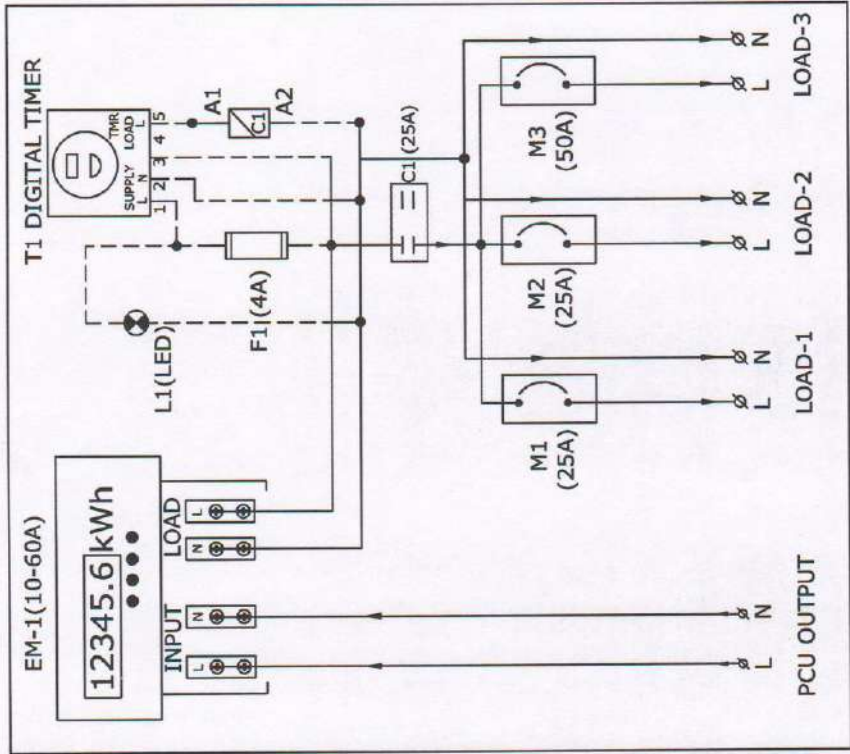


Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)



AC DISTRIBUTION PANEL (ACDB)
10KW (RURAL ELECTRIFICATION)

CIRCUIT DIAGRAM



NOTE:
• — POWER CABLES
• - - CONTROL CABLES

BILL OF MATERIALS					
SLNO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	EM - 1	DIGITAL ELECTRONIC ENERGY METER (KWH) 10-60A	1	No	L&T / SECURE
2	F1	FUSE LINK 4Amps	1	No	REPUTED
3	T1	DIGITAL PROGRAMMABLE TIMER WITH RTC	1	No	FRONTIER / L&T & REPUTED
4	C1	CONTACTOR - 3P, AG - A12-30-10	1	No	ABB / L&T
5	L1	POWER ON LAMP (LED) 230V AC, GREEN COLOR	1	No	TEKNIC / VAISHNO / REPUTED
6	M1, M2	1 POLE MCB 25A, 230VAC	2	Nos	SCHNEIDER / ABB / C&S
7	M3	1 POLE MCB 50A, 230VAC	1	No	SCHNEIDER / ABB / C&S
8	MAINS & PCU	CABLE GLAND PG - 21	2	Nos	JIGO / CONNECTWELL / HENSEL / OBO
9	FEEDERS	CABLE GLAND PG - 16	3	Nos	JIGO / CONNECTWELL / HENSEL / OBO
10	MAINS & PCU	TERMINAL BLOCKS UK16	04	Nos	DECA / PHOENIX / ELMEX
11	FEEDERS	TERMINAL BLOCKS UK16	06	Nos	DECA / PHOENIX / ELMEX
12	TERMINALS ACCESSORIES	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS CABLES / COPPER BUS BAR • POWER CABLE 10SQMM • CONTROL CABLE 1.5SQMM	14	Nos	DECA / PHOENIX / ELMEX
13	----		01	LOT	RR KABEL/INOX/ EQUIVALENT LAPP

ENCLOSURE DETAILS	
01	REPUTED

LABEL :- 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION
THIS SHALL CONSIST OF BOX OF SUITABLE POWDER COATED METAL CASING. ONE FEEDER PER PHASE SHALL BE PROVIDED IN ACDB WITH MCB OF SUITABLE CAPACITY INSTALLED AT EACH FEEDER IN THE ACDB. ONE ELECTRONIC ENERGY METER, ISI MAKE, SINGLE / THREE PHASE, OF GOOD QUALITY SHALL ALSO BE INSTALLED IN ACDB SUITABLE PLACED TO MEASURE THE CONSUMPTION OF POWER FROM SPV POWER PLANT. PROPER RATING MCB SHALL BE INSTALLED AT EVERY FEEDER (IN CASE OF SINGLE PHASE OUTPUT ALSO, THERE SHALL BE THREE FEEDERS) TO PROTECT FEEDERS FROM THE SHORT CIRCUIT CURRENT AS PER THE REQUIREMENT OF THE SITE & INSTRUCTIONS OF CREDA. A SEPARATE DEDICATED FEEDER FROM CONVENTIONAL GRID LINE TO PCU AS WELL AS ACDB SHOULD ALSO BE INSTALLED, IF REQUIRED AS PER CREDA'S INSTRUCTION. A SEPARATE CHANGE OVER SWITCH OF PROPER RATING SHOULD ALSO BE SUITABLY INSTALLED IN THE ACDB TO ISOLATE THE EXISTING CONNECTED LOAD FROM THE SOLAR SYSTEM & CATER THE POWER TO THE EXISTING LOAD FROM CONVENTIONAL POWER (GRID), IN CASE OF EMERGENCY. ACDB SHOULD BE CONNECTED BETWEEN PCU & LOAD. SEPARATE ELECTRONIC ENERGY METERS SHOULD BE INSTALLED FOR INCOMING AND OUTGOING CIRCUITS OF ACDB FOR SPVPPS OF CAPACITY MORE THAN 1 KWP.

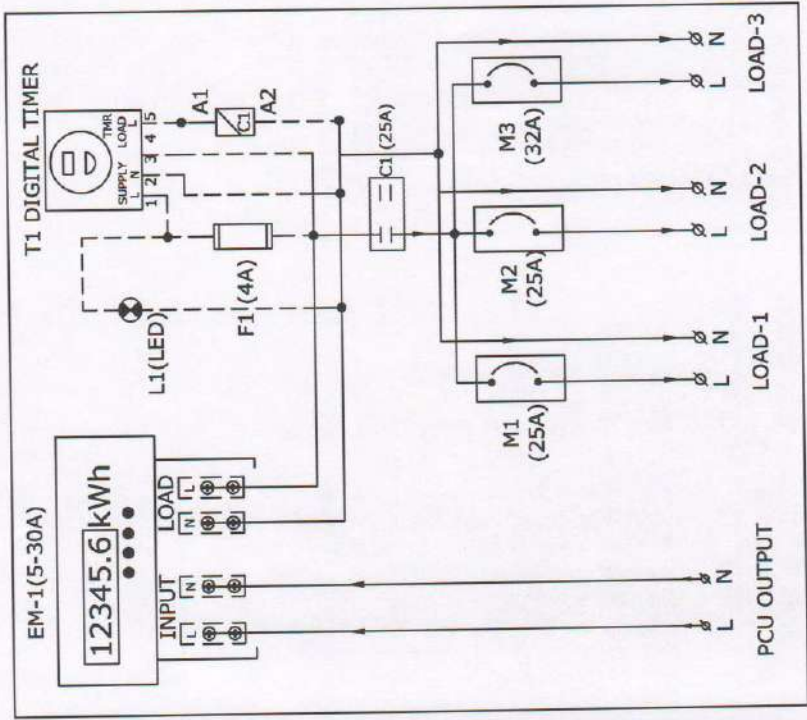


AC DISTRIBUTION PANEL (ACDB)
8KW (RURAL ELECTRIFICATION)

Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)



CIRCUIT DIAGRAM



BILL OF MATERIALS

SLNO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	EM-1	DIGITAL ELECTRONIC ENERGY METER (KWH) 5-30A	1	No	L&T / SECURE
2	F1	FUSE LINK 44Tps	1	No	REPUTED
3	T1	DIGITAL PROGRAMMABLE TIMER WITH RTC	1	No	FRONTIER / L&T / REPUTED
4	C1	CONTACTOR - 3P, AC - A12/30-10	1	No	ABB / L&T
5	L1	POWER ON LAMP (LED) 230V AC GREEN COLOR	1	No	TEKINC / VAISHNO / REPUTED
6	M1M2	1 POLE MCB 25A, 230VAC	2	Nos	SCHNEIDER / ABB / C&S
7	M3	1 POLE MCB 32A, 230VAC	1	No	SCHNEIDER / ABB / C&S
8	MAINS & PCU	CABLE GLAND PG - 21	2	Nos	JIGO / CONNECTWELL / HENSEL / OBO
9	FEEDERS	CABLE GLAND PG - 16	3	Nos	JIGO / CONNECTWELL / HENSEL / OBO
10	MAINS & PCU	TERMINAL BLOCKS UK25	04	Nos	DECA / PHOENIX / ELMEX
11	FEEDERS	TERMINAL BLOCKS UK16	06	Nos	DECA / PHOENIX / ELMEX
12	TERMINALS ACCESSORIES	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS CABLES / COPPER BUS BAR POWER CABLE 650MM ² CONTROL CABLE 1.5SQMM	14	Nos	DECA / PHOENIX / ELMEX
13	----		01	LOT	RR KABEL/FINOLEX/EQUIVALENT

ENCLOSURE DETAILS

01	REPUTED
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LABEL:- 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF BOX OF SUITABLE POWDER COATED METAL CASING. ONE FEEDER PER PHASE SHALL BE PROVIDED IN ACDB WITH MCB OF SUITABLE CAPACITY INSTALLED AT EACH FEEDER IN THE ACDB. ONE ELECTRONIC ENERGY METER, ISI MAKE, SINGLE / THREE PHASE, OF GOOD QUALITY SHALL ALSO BE INSTALLED IN ACDB SUITABLE PLACED TO MEASURE THE CONSUMPTION OF POWER FROM SPV POWER PLANT. PROPER RATING MCB SHALL BE INSTALLED AT EVERY FEEDER (IN CASE OF SINGLE PHASE OUTPUT ALSO, THERE SHALL BE THREE FEEDERS) TO PROTECT FEEDERS FROM THE SHORT CIRCUIT CURRENT AS PER THE REQUIREMENT OF THE SITE & INSTRUCTIONS OF CREDA. A SEPARATE DEDICATED FEEDER FROM CONVENTIONAL GRID LINE TO PCU AS WELL AS ACDB SHOULD ALSO BE INSTALLED, IF REQUIRED AS PER CREDA'S INSTRUCTION. A SEPARATE CHANGE OVER SWITCH OF PROPER RATING SHOULD ALSO BE SUITABLY INSTALLED IN THE ACDB TO ISOLATE THE EXISTING CONNECTED LOAD FROM THE SOLAR SYSTEM & TO FEED THE POWER TO THE EXISTING LOAD FROM CONVENTIONAL POWER (GRID), IN CASE OF EMERGENCY. ACDB SHOULD BE CONNECTED BETWEEN PCU & LOAD. SEPARATE ELECTRONIC ENERGY METERS SHOULD BE INSTALLED FOR INCOMING AND OUTGOING CIRCUITS OF ACDB FOR SPVPPS OF CAPACITY MORE THAN 1 KWP.

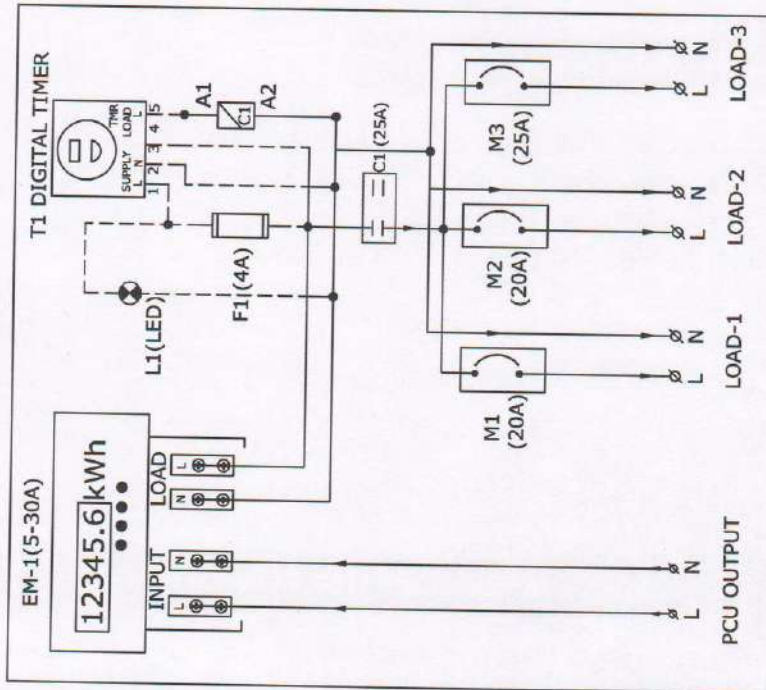


Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)



AC DISTRIBUTION PANEL (ACDB)
6KW (RURAL ELECTRIFICATION)

CIRCUIT DIAGRAM



NOTE:

- — POWER CABLES
- - - CONTROL CABLES

BILL OF MATERIALS

S/NO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE
1	EM-1	DIGITAL ELECTRONIC ENERGY METER (NWH) 5-30A	1	No	LAT / SECURE
2	F1	FUSE LINK 4Amps	1	No	REPUTED
3	T1	DIGITAL PROGRAMMABLE TIMER WITH RTC	1	No	FRONTIER / LAT / REPUTED
4	C1	CONTACTOR - 3P, AC - A12-30-10	1	No	ABB / LAT
5	L1	POWER ONY LAMP (LED) 230V AC GREEN COLOR	1	No	TECHNIC / VAISHNO / REPUTED
6	M1, M2	1 POLE MCB 20A, 230VAC	2	Nos	SCHNEIDER / ABB / C&S
7	M3	1 POLE MCB 25A, 230VAC	1	No	SCHNEIDER / ABB / C&S
8	MAINS & PCU	CABLE GLAND PG - 21	2	Nos	JUGO / CONNECTWELL / HEINSEL / OBO
9	FEEDERS	CABLE GLAND PG - 16	3	Nos	JUGO / CONNECTWELL / HEINSEL / OBO
10	MAINS & PCU	TERMINAL BLOCKS UK10	04	Nos	DECA / PHOENIX / ELMEX
11	FEEDERS	TERMINAL BLOCKS UK10	06	Nos	DECA / PHOENIX / ELMEX
12	TERMINALS ACCESSORIES	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS CABLES / COPPER BUS BAR • POWER CABLE 450MM ² • CONTROL CABLE 1.550MM ²	14	Nos	DECA / PHOENIX / ELMEX
13	....		01	LOT	RR KABEL / FINOLEX EQUIVALENT LAPP

ENCLOSURE DETAILS

- DIMENSION : 400 X 400 X 115 MM (TYPICAL)
- THICKNESS : 12 MM
- COATING SHADE : RAL 7032 (SILVER GREY)
- COATING THICKNESS : 60 MICRONS
- FINISHING : POWDER COATING
- CABLE ENTRY : BOTTOM
- MOUNTING : WALL / FLOOR MOUNTING WITH FASTENERS

REPUTED

LABEL - 1, DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LD
2, DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF BOX OF SUITABLE POWDER COATED METAL CASING. ONE FEEDER PER PHASE SHALL BE PROVIDED IN ACDB WITH MCB OF SUITABLE CAPACITY INSTALLED AT EACH FEEDER IN THE ACDB. ONE ELECTRONIC ENERGY METER, ISI MAKE, SINGLE / THREE PHASE OF GOOD QUALITY SHALL ALSO BE INSTALLED IN ACDB SUITABLE PLACED TO MEASURE THE CONSUMPTION OF POWER FROM SPV POWER PLANT. PROPER RATING MCB SHALL BE INSTALLED AT EVERY FEEDER (IN CASE OF SINGLE PHASE OUTPUT ALSO, THERE SHALL BE THREE FEEDERS) TO PROTECT FEEDERS FROM THE SHORT CIRCUIT CURRENT AS PER THE REQUIREMENT OF THE SITE & INSTRUCTIONS OF CREDA. A SEPARATE DEDICATED FEEDER FROM CONVENTIONAL GRID LINE TO PCU AS WELL AS ACDB SHOULD ALSO BE INSTALLED, IF REQUIRED AS PER CREDA'S INSTRUCTION. A SEPARATE CHANGE OVER SWITCH OF PROPER RATING SHOULD ALSO BE SUITABLY INSTALLED IN THE ACDB TO ISOLATE THE EXISTING CONNECTED LOAD FROM THE SOLAR SYSTEM & CATER THE POWER TO THE EXISTING LOAD FROM CONVENTIONAL POWER (GRID), IN CASE OF EMERGENCY. ACDB SHOULD BE CONNECTED BETWEEN PCU & LOAD. SEPARATE ELECTRONIC ENERGY METERS SHOULD BE INSTALLED FOR INCOMING AND OUTGOING CIRCUITS OF ACDB FOR SPVPPS OF CAPACITY MORE THAN 1 KWP.



Chhattisgarh State Renewable Energy Development Agency
(Department of Energy, Govt. of Chhattisgarh)



**AC DISTRIBUTION PANEL (ACDB)
5KW (RURAL ELECTRIFICATION)**



(Department of Energy, Govt. of Chhattisgarh)

AC DISTRIBUTION PANEL (ACDB)
4KW (RURAL ELECTRIFICATION)

BILL OF MATERIALS						
S/NO	CKT REF	ITEM DESCRIPTION	QTY	UNIT	MAKE	
1	EM - 1	DIGITAL ELECTRONIC ENERGY METER (KWH) 5-30A	1	No	L&T / SECURE	
2	F1	FUSE LINK 44mps	1	No	REPUTED	
3	T1	DIGITAL PROGRAMMABLE TIMER WITH RTG	1	No	FRONTIER / L&T / REPUTED	
4	C1	CONTACTOR - 3P, AC-A1230-10	1	No	ABB / L&T	
5	L1	POWER ONY LAMP (LED) 200V AC, GREEN COLOR	1	No	TEKNIC / VAISHNO / REPUTED	
6	M1, M2	1 POLE MCB 16A, 230VAC	2	Nos	SCHNEIDER / ABB / C&S	
7	M3	1 POLE MCB 25A, 230VAC	1	No	SCHNEIDER / ABB / C&S	
8	MAINS & PCU	CABLE GLAND PG - 21	2	Nos	JIGO / CONNECTWELL / HENSEL / OBO	
9	FEEDERS	CABLE GLAND PG - 16	3	Nos	JIGO / CONNECTWELL / HENSEL / OBO	
10	MAINS & PCU	TERMINAL BLOCKS UK10	04	Nos	DECA / PHOENIX / ELMEX	
11	FEEDERS	TERMINAL BLOCKS UK10	06	Nos	DECA / PHOENIX / ELMEX	
12	TERMINALS ACCESSORIES	LUGS FOR INTERNAL WIRING AS WELL AS FOR USER TERMINATIONS	14	Nos	DECA / PHOENIX / ELMEX	
13	----	CABLES / COPPER BUS BAR • POWER CABLE 4SQMM • CONTROL CABLE 1.5SQMM	01	LOT	RR KABELFINO, XEQUIVALENT	

ENCLOSER DETAILS

- DIMENSION : 400 X 400 X 115 MM (TYPICAL)
- THICKNESS : 12 MM
- COATING SHADE : RAL 7032 (SIMENS GREY)
- COATING THICKNESS : 60 MICRONS
- FINISHING : POWDER COATING
- CABLE ENTRY : BOTTOM
- MOUNTING : WALL / FLOOR MOUNTING W

LABEL: - 1. DETAIL CIRCUIT DIAGRAM SHALL BE PASTED ON THE LID
2. DANGER SYMBOL SHALL BE PASTED ON THE ENCLOSURE

DESCRIPTION

THIS SHALL CONSIST OF BOX OF SUITABLE POWDER COATED METAL CASING, ONE FEEDER PER PHASE SHALL BE PROVIDED IN ACB WITH MCB OF SUITABLE PHASE. AT EACH FEEDER IN THE ACB, ONE ELECTRONIC ENERGY METER, ISI MAKE, SINGLE / THREE PHASE, OF GOOD QUALITY SHALL ALSO BE INSTALLED IN ACB SUITABLE PLACED TO MEASURE THE CONSUMPTION OF POWER FROM SPV POWER PLANT. PROPER RATING MCB SHALL BE INSTALLED AT EVERY FEEDER (IN CASE OF SINGLE PHASE OUTPUT ALSO, THERE SHALL BE THREE FEEDERS), TO PROTECT FEEDERS FROM THE SHORT CIRCUIT CURRENT AS PER THE REQUIREMENT OF THE SITE & INSTRUCTIONS OF CREDA. A SEPARATE DEDICATED FEEDER FROM CONVENTIONAL GRID LINE TO PCU AS WELL AS ACB SHOULD ALSO BE INSTALLED, IF REQUIRED AS PER CREDAS INSTRUCTION. A SEPARATE CHANGE OVER SWITCH OF PROPER RATING SHOULD ALSO BE SUITABLY INSTALLED IN THE ACB TO ISOLATE THE EXISTING CONNECTED LOAD FROM THE SOLAR SYSTEM & CATCHER THE POWER TO THE EXISTING LOAD FROM CONVENTIONAL POWER (GRID). IN CASE OF EMERGENCY, ACB SHOULD BE CONNECTED BETWEEN PCU & LOAD. SEPARATE ELECTRONIC ENERGY METERS SHOULD BE INSTALLED FOR INCOMING AND OUT GOING CIRCUITS OF ACB FOR SMPVPS OF CAPACITY MORE THAN 1 KWp.

END