

**CHHATTISGARH STATE POWER**  
**TRANSMISSION CO. LTD.**

**OFFICE OF THE CHIEF ENGINEER (S&P)**  
**C.S.P.TRANS.C.L., DANGANIA, RAIPUR: 492013 (C.G.)**

Phone No. 0771-2574236, 2574240

**LIMITED TENDER No. 51/551**

**(e-Bidding)**

**SUPPLY OF TRI-VECTOR , 3 PHASE, 4- WIRE, ENERGY METER**

**RFx No.8100018165**

**LAST DATE & TIME OF SUBMISSION OF TENDER**

**07.08.2020 (TIME 15:00 HRS.)**

**DUE DATE OF OPENING OF TENDER**

**07.08.2020 (TIME 15:30 HRS.)**

**PRICE Rs. 560/- (Inclusive of 12%  
GST) if Purchase from O/o C.E. (S&P)  
& Rs. 590/- (Inclusive of 18%  
GST) if downloaded**

For website

# CHHATTISGARH STATE POWER TRANSMISSION COMPANY LIMITED

(A Government of Chhattisgarh Undertaking)

## OFFICE OF CHIEF ENGINEER (S&P)

Address : 3<sup>rd</sup> Floor, LD Building, Dangania-Raipur (CG)-492013

Website: [www.cspc.co.in](http://www.cspc.co.in)

Tele.No.0771-2574239

No. 02-16/SE(I)/Ltd. Tender No. 51/551

Raipur, dtd. 14.07.2020

### e-PROCUREMENT TENDER NOTICE

Sealed tenders are invited from **Manufacturer/ Authorized Dealer/ Experience/Registered suppliers of CSPTCL/CSPDCL** for supplying of following materials:-

S.No.	Ltd. tender No.	Particulars	Qty. in Nos.	Cost of tender doc. (Rs.)	EMD in Rs.	Due date
1	Ltd. Tender No. 02-16/SE(I)/ Ltd. TR No. 51 RFX No.8100018165	Tri-vector, 3-Phase, 4- Wire, Energy meter having 0.2s accuracy class (With RS-485 port)	50	i) Rs. 560/- (Incl. 12% GST)Purchase from O/o CE (S&P) ii) Rs. 590/- (Incl. 18% GST) if downloaded from website)	10000/-	07.08.2020

In case any of the above dates is declared as holiday then the particular date will automatically get shifted to next working day.

- i) The quantities mentioned above are tentative & may vary according to final requirement.
- ii) Any notice for extension of due date of tender opening shall not be published in newspapers. It will be displayed only on official website of the company.
- iii) The tender will be processed through e-bidding module of SAP-SRM. Bidders are advised to visit our website [www.cspc.co.in/cspctl](http://www.cspc.co.in/cspctl) for viewing detailed instructions regarding submission of offer through SAP-SRM.

#### **TERMS AND CONDITIONS:-**

- i) The tender documents can be obtained from the office of the C.E. (S&P), CSPTCL, Raipur in person on payment of cost of tender document in the form of MICR D.D. only made out in the name of Manager, RAO (HQ), CSPTCL, Raipur accompanied with firm's application on its letter head on any working day one day before the due date. If tender document is required by post, Rs.250/- is to be paid by D.D. along with the cost of documents. If more than one tender document is required, separate DDs should be furnished for each tender. CSPTCL shall not be responsible for any postal delay regarding receipt/non-receipt of tender documents.
- ii) The tender document will be made available on CSPTCL web site [www.cspc.co.in](http://www.cspc.co.in). The bidder participating in the tender can download the document from web site. In such case, the cost of tender document in the form as detailed above be submitted along with the tender in EMD envelop. In absence of same, the tender shall not be opened.  
The bidders who download the documents are requested to remain in contact with this office for any development in the tender.
- iii) Tender documents and the detailed specification could be issued on any working day up to the last date of sale of tender document. The duly filled tenders should be dropped in the tender box of the respective tender up to 15:00 hrs. on the due date. In case of tenders sent through post/ courier, it will be responsibility of the bidder to drop/get dropped the tender in the respective tender box. No receipt of the tender shall be issued in any case. The T.C. bid shall be opened at 15.30 Hrs. on above date.
- iv) After publication of NIT & before the date of opening of TC bid, corrigendum/ other information (if any) shall be displayed on our official web only. The bidders are requested to remain in contact with this office or visit our web-site for any development/ clarification/ amendment issued subsequently.
- v) CSPTCL reserves the right to accept or reject any or all the offers, in part or full without assigning any reason whatsoever.

Website [www.cspc.co.in](http://www.cspc.co.in)  
(Go through CSPTCL-Tender notice)

**Chief Engineer (S&P)**  
**CSPTCL, Raipur**

## **Special Instructions to bidders for submission of bid through SAP- SRM module (e-bidding)**

The limited tender No. 02-16/SE(I)/TR No. 51/551 Raipur, dtd. 14.07.2020 is to be processed through e-bidding. The bid is to be submitted online as well as offline (hard copy). Details of NIT & Tender Documents are available on our website—<http://www.cspc.co.in> & <http://ebidding.cspcl.co.in:50700/irj/portal>. The bidder may download the same from the above site. In e-bidding portal, tender documents will be displayed in online tender display at Technical RFx section.

Last date & time of submission of bid in hard copy and also in softcopy is 07.08.2020 upto 3.00 pm and due date & time of opening of the tender is 07.08.2020 at 3.30 pm.

### **Important Instructions :-**

1. Please note that this tender shall be processed online as well as offline. The bidder has to submit all the documents in hard copy as per tender specifications in three envelopes. Besides above, scanned copy of following documents are to be uploaded in e-bidding portal:-
  - (a) The scanned copy of DD for tender fee.
  - (b) The scanned copy of DD for EMD/ EMD exemption.

It may please be noted that only above mentioned documents are to be uploaded in e-bidding portal and no other document is required to be submitted in e-bidding portal. The bidder shall give reply to following questions regarding above documents in e-bidding portal:-

- (i) Whether scanned copy of tender fee DD uploaded. Yes/No
  - (ii) Whether scanned copy of DD of EMD /EMD Exemption uploaded. Yes/No
3. It is not required to upload/attach scanned copy of price bid in Soft/Hard copy. Only the rates are to be filled in the item tab in e-cid in SAP SRM System (online e0tender). Rates should be quoted online & in specified fields only. Once the rates are filled, the bidders may change their rates up to the due date and time of submission of tender. After due date and time, no change on any ground whatsoever will be accepted.
  2. After scrutiny of techno-commercial bid, the price bid will be opened in e-bidding system only of eligible bidders for which suitable intimation will be given to the bidders offline & through email. C.E.(S&P), CSPTCL Ltd. Tender No. 51/551 for Procurement of Tri-vector, 3-Phase, 4-Wire, Energy meter having 0.2s accuracy class (With RS-485 port)
  3. Please note that e-mail is always system generated, hence bidders are advised to regularly check their inbox/junk mail box.
  4. CSPTCL shall not assume any responsibility for non-supporting of system, internet, line & associated hardware & software for bidding their tender. No extension in time shall be granted on such grounds. The bidder should submit their bid well before submission dead line to avoid any system related problem. It is strongly recommended not to wait for submission of bid in last minutes as internet/technical problem may disrupt their works.
  5. Reference time for submission dead line shall be the time displayed in the portal and shall be treated as final.
  6. After end of submission dead line, no alteration in the tender will be allowed by the system. However, in case of extension of due date of opening of tender, the bidders will be allowed to submit revised bid in the system.
  7. CSPTCL will not accept incomplete bid.

8. The bidder must have a valid Digital Signature & SAP SRM User ID. User ID & Password from CSPTCL and Digital Signing Certificate and Digital Encryption Certificate from any recognized digital signature issuing authority are required for participation in any Tender. The bidder shall intimate in advance regarding details of digital signature issuing authority for ensuring the reliability of the same. For User ID and Password for participating in the tender, the bidder shall register on line through e-bidding portal.
10. The e-bidding vendor user manual displayed on website- <http://ebidding.cspcl.co.in:50700/irj/portal> for the help of the bidders. For any further queries the bidder may contact at Helpline no. 0771-2576672/73 (EITC, CSPDCL, Raipur)
11. The training for bidders will be on every Wednesday from 3.00 pm to 5.00 pm at office premises of Energy Info Tech Center (EITC) at Dangania, Raipur.
12. Tender shall be opened in the scheduled time as notified. If the due date of opening/submission of tender documents is declared a holiday by the Govt. or local administration, it will be automatically shifted to next working day for which no prior intimation shall be given. Tender opening shall be continued on subsequent days, in case the opening of all tenders is not completed on due date because of the technical constraints of system on the day of opening. It may be noted that the due date of opening/time may be altered/ extended if desired by CSPTCL without assigning any reason. However, intimation shall be available on company's tender portal/bidders email (if participation shown). The bidders are requested to keep track of the same.
13. Amendment in tender specification will be published on our website as well as in SRM system and the intimation regarding amendment in date extension will be conveyed through system generated e-mail to registered bidders only.
14. Before participating the bidder shall carefully read all the instructions and processes.
15. Tender duly completed in all respects will be accepted online up to due date & time and will be opened on the due date at specified time in the presence of bidders or their C.E.(S&P), CSPTCL Tender No. 51/551 for supply of **Tri-vector, 3-Phase, 4- Wire, Energy meter having 0.2s accuracy class (With RS-485 port)**. Tender should reach the office of The Chief Engineer (S&P), CSPTCL authorized representatives. In case of authorized representative(s) they shall bring the original authorization letter with their signature attested by the bidder.
16. **The bidder should be Manufacturer/Authorized Dealer/Experience Registered suppliers of CSPTCL/CSPDCL only with proper validity for supply/ work of such materials. (Submit the related documents dully self attested)**

**Chief Engineer (S&P)**  
**CSPTrans.CL : Raipur**

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## OFFICE OF CHIEF ENGINEER (S&P)

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Website:[www.cspc.co.in](http://www.cspc.co.in)

Fax :0771-2574246,

Tele.No.0771-2574236

No. 02-16/SE(I)/Ltd. TR No./51/551

Raipur, dtd. 14.07.2020

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Purchase of **Tri-vector, 3-Phase, 4- Wire, Energy meter having 0.2s accuracy class (With RS-485 port)** as mentioned in e-tender notice and offer for due for submission on dt. 07.08.2020 up to 15.00 Hrs. & to be opened on same date i.e. 07.08.2020 (15.30 Hrs.)

### **EARNEST MONEY DEPOSIT: Rs. 10000.00 (Rs. Ten Thousand only)**

Tender cost Rs. 560.00 (Rs. Five hundred sixty) if purchased from this office and Rs. 590/- (Rs. Five hundred ninety) if downloaded only {**Non refundable**}

### **ISSUED :**

M/s. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Sold vide M.R. No. \_\_\_\_\_ Dated \_\_\_\_\_ for Rs. 560.00 (Rs. Five Hundred sixty ) only .

### **Note :-**

- (1) This complete form must be returned at the time of submitting the sealed tender Envelope duly super scribed "Tender Name, Tender No., Due date of opening, Firm's name & address in the O/o C.E.(S&P), CSPTCL, Dangania, Raipur within scheduled time/date otherwise tender shall be liable for rejection.
- (2) The tender should be submitted in the office having minimum THREE envelopes Namely as under:-
  - Sealed Envelop-1:** For Earnest Money only duly super scribed "Tender Name, tender No., due date of opening & Firm's name seal & address (Part-I).
  - Sealed Envelop-2:** Prescribed document along with TERMS & CONDITIONS duly super scribed "Tender Name, No., due date of opening etc.
  - Sealed Envelop-3** Price bid only.

SE(I)

O/o Chief Engineer (S&P)

CSPTrans.CL : Raipur

**PRICE BID IN SEPARATE ENVELOPS**

Tender specification No. 02-16/SE(I)/Ltd. TR No.51/551 Raipur, dtd. 14.07.2020, due for submission on dt. 07.08.2020 up to 15.00 Hrs. & to be opened on dt. 07.08.2020 (15.30 Hrs.) EMD REQUIRED Rs. 10000.00 (Rs. Ten thousand only).

The undersigned hereby tender and officer to CSPTCL to supply the material for the quantity at the rates as indicated here under:-

S.No.	Specification of Material (As per tender)	Qty. in Nos.	Unit Ex-works price inclusive of packing, forwarding, charges (Rs. /Unit)	Freight Charges per Unit (Rs.)	GST on Ex-works Price+ Freight charges ---% in Rs.	Total Unit FOR D price including packing, forwarding, freight charges & GST (In Rs.)	Total Amt. in Rs.
1	Tri-vector, 3-Phase, 4- Wire, Energy meter having 0.2s accuracy class (With RS-485 port).	50					

The undersigned undertake to observe and abide by the terms & condition at the tender specification enclosed herewith.

Earnest money of Rs. 10000.00 ( Rs. Ten Thousand) only has been deposited to the **Manager (RAO:HQ), CSPTCL:Raipur (C.G.)** vide M.R. No. \_\_\_\_\_ dtd. \_\_\_\_\_ / D.D. No. \_\_\_\_\_ dtd. \_\_\_\_\_ Drawn \_\_\_\_\_ ( Name of Bank ) .

Place:  
Date:

Signature of bidders  
Name  
Address  
Seal

**Limited Tender No. 02-16/SE(I)/Enq. No./51/551 Raipur, dtd. 14.07.2020**

**Other Terms and Conditions (if any)**

- 1) FOR: .....
- 2) Taxes: .....
- 3) Validity:.....
- 4) Delivery:.....
- 5) Payment:.....
- 6) Security Deposit:.....
- 7) Others:.....

Place:  
Date:

Signature of bidders  
Name  
Address  
Seal

**Limited Tender No. 02-16/SE(I)/Enq. No./51/551 Raipur, dtd. 14.07.2020**

**Details of Bidders**

- 1) Name of firm/partners & Address :-----  
:-----  
:-----
- 2) Phone /Mobile No :-----
- 3) GST Registration No. :-----
- 4) PF No. if any :-----
- 5) ESI Registration No. (If applicable) :-----
- 6) PAN (Mandatory) :-----
- 7) SAP Vendor No. :-----
- 8) Vender Registration No. :-----

Place:  
Date:

Signature of bidders  
Name  
Address  
Seal



C.I.N. : U40108CT2003SGC015820

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02-16/SE(I)/Ltd. TR No./51/551

Raipur, dtd. 14.07.2020

Due On 07.08.2020

### SECTION-I

#### GENERAL TERMS & CONDITIONS OF TENDER SPECIFICATION.

- 1) Sealed tenders quotation are invited by The Chief Engineer (S&P), CSPTCL: Raipur, for supply of **Tri-vector, 3-Phase, 4- Wire, Energy meter having 0.2s accuracy class (With RS-485 port)**.
- 2) Tender should reach the office of The Chief Engineer (S&P), CSPTCL, Dangania Raipur, by **15.00 Hrs. on 07.08.2020**. Tenders received after the stipulated time / date will not be considered. Covers should invariably be superscribed for supply of **Tri-vector, 3-Phase, 4-Wire, Energy meter having 0.2s accuracy class (With RS-485 port)**. for various EHV S/s under jurisdiction of C.E. (S/s-O&M), Raipur and should be accompanied with Bankers Cheque or DD payable in favor of The Manager (RAO:HQ) CSPTCL, Raipur (C.G.). The tender will be opened on the same day at 15.30 Hrs.
- 3) When tenders are delivered by special messenger it should be dropped in the "Tender Box" kept in the office of The Chief Engineer (S&P), CSPTCL, Daganiya Raipur on any working day between 10.30 Hrs. to 15.00 Hrs.
- 4) Full descriptive particulars and complete specifications should accompany the tender. Offers should be kept open for acceptance for at least three months from the date of opening. However in due circumstances beyond control bidders are advised to extend validity. However, they shall not be permitted to revise their rates.
- 5) The CSPTCL reserves the rights to reject any or all tenders or to accept any tender considered advantageous to the CSPTCL whether it is the lowest tender or not, and In case of correction done in the tender, the same should be initialed otherwise tenders may not be considered.
- 6) All the Bidders shall essentially indicate the break-up of prices as shown in tender form. In case any of the charges are not included in the quoted prices, the same shall be clearly shown as extra, indicating specifically the rate/scale of such charges.
- 7) The terms and conditions mentioned in tender specification shall be binding on all Bidders and no condition or stipulation contrary to our condition shall be applicable.
- 8) **EARNEST MONEY:** Each bidders should submit an earnest money of Rs. 10000/-(Rs. Ten thousand) only.

## 9) Earnest Money Deposit:

Please note that the tender will not be opened at the time of tender opening if earnest money is not deposited in the form of demand draft/Banker Cheque unless the bidder is exempted from submission of EMD. The exemption from submission of EMD shall be given in the following cases:

- (i) SSI units of Chhattisgarh state permanently registered with DIC. The registration should be permanent & should be specifically for the items quoted in the tender & valid on the date of opening of tender.
- (ii) Small scale units registered with NSIC: - In case of small scale units permanently registered with NSIC, their registration certificates should be valid for the item under tender on due date of opening of Techno-commercial bid.
- (iii) Fully owned State Govt /Central Govt. units, if 100% shares are held by the state Govt. concerned for which documentary evidence must be furnished with offer.
- (iv) The photocopy of the NSIC/ SSI registration certificate for the tendered item duly notarized by a notary should be furnished with the offer. In case of an notarized copy, the original certificate should be produced at the time of opening for verification failing which their offer will be liable for rejection.
- (v) The tenderers who come under any of above category must produce documentary evidence failing which offer shall be rejected.

In case the tenderer withdraws his offer during the validity period or after placement of order the Earnest Money shall be forfeited. EMD of unsuccessful bidders shall be returned on placement of order. EMD of bidder on whom order is placed shall be returned on acceptance of security deposit. No interest shall be paid on the EMD amount.

- 10) SUBMISSION OF EARNEST MONEY DEPOSIT:** -A separate envelope containing the earnest money or a certificate in support of claim for exemption from this should be attached with your offer duly super scribed Earnest Money Deposit in appropriate form against tender specification No. 02-16/SE(I)/Ltd. TR. No./51/551 Raipur, dtd. 14.07.2020 for supply of Tri-vector, 3-Phase, 4- Wire, Energy meter having 0.2s accuracy class (With RS-485 port). for various EHV Sub-stations

## 11) EXTENSION ORDER: -

In the event of an order being placed on Bidders, he is requested give his concurrence that he is also willing to accept additional order on the same terms and conditions , if the extension order is placed by the CSPTCL within six months from the date of acceptance / placement of order.

## 12) Price reduction clause:-

In case a fresh tender is issued for the same item before completion of supply against extension order and lower rates are received in the fresh tender .The lower rates received in the fresh tender shall be applicable to the quantity of extension order balance to be supplied also.

- 13) PRICE:-**The prices should be quoted F.O.R. Destination including packing, forwarding, freight , insurance , GST and any other charges .

- 14) **PERFORMANCE GUARANTEE / DEFECTIVE SUPPLIES :-**  
If during the course of 12 months from the date of dispatch, any of the goods is found to be defective in materials or workmanship or develop defect in service, the same will be rectified by you free of all charges.
- 15) **SECURITY DEPOSIT :-**  
The successful Bidders shall deposit security at the rate of 10 % of the value of the order in the form of Bankers Cheque or Bank Draft in favour of “**Manager (RAO:HQ) CSPTCL, Raipur (C.G.).**”
- 16) **PAYMENT :-**  
100 % payment against receipt of the material in the STORES in good condition within a month shall be made by Manager (RAO:HQ) CSPTCL, Raipur (C.G.). No interest shall be payable in case of delay in payment.
- 17) **PENALTY :-**  
The time for and the date of delivery of the material stipulated in the order shall be deemed the essence of the contract. In case of delay in execution or non-execution of the order the CSPTCL at its option shall recover from the supplier/ contractor as agreed **towards liquidated damages** a sum of 0.5 % of the total price (excluding taxes) of any stores not delivered per week or part thereof up to a maximum of 10%.
- 18) **MATERIALS :-**All materials supplied shall be as per technical specification given in the Section-II.
- 19) **DELIVERY :-**  
The delivery shall be completed within specified days mentioned in the order from the date of receipt the tendered order.
- 20) **CONSIGNEE:-**The Executive Engineer (Area Stores) CSPTCL, Bhilai/Bilaspur
- 21) **SUBMISSION OF BILLS:-**  
All the bills shall be submitted in triplicate to the E.E.(Area Stores), CSPTCL, Bhilai/Bilaspur
- 22) **ANY DESPUTE ARISING:-** Out of the contract shall be subject to the jurisdiction of court at Raipur.
- 23) The Chief Engineer (S&P), CSPTCL, Raipur (C.G.) reserve the right to amend or reject or the tender partially or fully or to change the Quantity of materials without assigning any reason, at any stage whatsoever

**S.E. (I)**  
**O/O C.E.(S&P) CSPTCL: RAIPUR**

**SCHEDULE –II**  
**TECHNICAL SPECIFICATION OF DLMS COMPLIANT HT STATIC TRI-VECTOR ENERGY METER**  
**0.2S CLASS FOR FEEDER METERING**

1. **SCOPE:** This specification covers design, manufacturing, testing, supply of high precision three phase four wire static tri-vector energy meters of accuracy class 0.2s or better, capable of performing functions of energy audit, feeder metering/ boundary metering in sub-transmission system & load survey applications.

It is not the intent to specify completely herein all the details of the design and construction of material. However the material shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation in a manner acceptable to the purchaser, who will interpret the meanings of drawings and specification and shall have the right to reject any work or material which in his judgment is not in accordance therewith. The offered materials shall be complete with all components, accessories necessary for their effective and trouble free operation of the system for energy measurement. Such components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specifically brought out in this specification and / or the commercial order or not.

- 2.1 **STANDARD APPLICABLE:** The meters shall be ISI marked of class 0.5S class accuracy and unless otherwise specified elsewhere in this specification, the meter shall conform in all respects including performance and testing thereof to the following Indian / International Standards to be read with upto-date and latest amendments / revisions thereof.

SN	Standard No.	Title
1	IS: 14697-1999(with latest amendments).	Specification for AC static watt hour meters Class 0.2s& 0.5S
2	IEC 62052-11	Electricity metering equipments (AC) – General requirements & test conditions Part 11. metering equipments
3	IEC 62053-22	Electricity Metering equipments (AC)- particular Requirements – Part – 21 Static meters for active Energy (Class 0.2s& 0.5S)
4	IEC 62053-61	Electricity Metering Equipment (a.c)- Particular requirement – Part - 61 - Power consumption and voltage requirements
5	IEC– 61000-4-5 (2001-04)	Electromagnetic capability, Testing and measurement Techniques, Surge immunity test
6	IEC 61358:1996	Acceptance inspection for direct connected AC static Watt hour meter for active energy (Class 0.2s& 0.5S)
7	CBIP,New Delhi technical Report No.325 with latest amendments	Specification for AC static electrical energy meters.
8	IS : 9000	Basic Environmental testing procedures for Electronic & Electrical items.
9	ANSI/IPC-A- 610	Workmanship standard for Acceptability of Electronic Assemblies (A standard developed by Institute for Interconnecting and packaging Circuits)
10	IS:15959/2011 with latest amendments	IS for data exchange for electricity meter reading, tariff and load control – companion specification

In case of any conflict or discrepancy, the order of precedence shall be (i) IS (ii) IEC (iii) CBIP technical report-325 (read with latest amendments). In case of any difference between the provisions of these standards and of this specification, the provisions contained in this specification shall prevail.

- 2.2 **BIS STANDARD MARK:** Meters shall have BIS Standard 'ISI' Mark and supplier should possess valid BIS licence.
3. **CLIMATIC CONDITIONS:** The meters shall be suitably designed and treated for normal life and satisfactory operation under the hot and hazardous tropical climate conditions typically existing in state of

Chhattisgarh (India) and shall be dust and vermin proof. All the parts and surfaces which are subjected to corrosion shall either be made of such material or shall be provided with such protective finish which provides suitable protection to them from any injuries effect of excessive humidity. The meter shall be required to be operated satisfactorily and continuously under the following tropical climatic conditions:

i)	Temperature	4° C to 55°C (45°C in shade)
ii)	Relative Humidity	10% - 95% (Sometimes approaches to saturation)
iii)	Average annual rainfall	1250 mm
iv)	Max. wind pressure	150 Kg per Sq. mm
v)	Max. altitude	1000 meters.
vi)	Average No. of dust-storm days per annum	40 days
vii)	Average no. of rainy days per annum	90 days
viii)	No. of months of tropical monsoon conditions per annum	3 months

**4. TECHNICAL REQUIREMENT AND DESIGN CRITERION:**

Meters are required for installation in the premises of sub-stations. The basic system parameters for which these meters will be used shall be as under:

Accuracy class	0.2S
No. of phases	3 phase 4 wire with 3 current & 3 voltage measuring circuits
Primary voltage	----- (phase to neutral)
Secondary voltage	110/√3 volts (phase to neutral)
Voltage variation	Meter should record correct energy for +20% of $V_{ref}$ to (-) 40% of $V_{ref}$ .
Frequency	50 Hz ±5%
System of earthing	Solidly grounded.
Primary current	-----
Secondary current	1 Amp (connected through CT)
Starting current.	0.1% $I_b$ at Unity Power Factor in each phase as per IS
Maximum current	200% of $I_b$
Power factor Range	0 lag - Unity – 0 lead
Power loss	a) Voltage circuit: The active and apparent power consumption in voltage circuit including the power supply of meter at reference voltage reference frequency and reference temperature shall not exceed 1.5 watt and 8 VA respectively. b) Current circuit: The apparent power taken by the current circuit at basic current, reference frequency and reference temp shall not exceed 1.0 VA.

**4.2 POWER SUPPLY VARIATION:** The extreme power supply variation for which an operating meter should withstand without damage and without degradation of its metrological characteristics when it is subsequently operated under its normal operating conditions shall be as follows:

Specified operating range: 0.80 to 1.1  $V_{ref}$

Limit range of operation : 0.70 to 1.2  $V_{ref}$

Frequency : 47.5 Hz to 52.5 Hz (Reference frequency 50 Hz)

Meter shall be functional and able to register energy even if the voltage falls up to 50% of the rated voltage.

**4.3 RUNNING WITH NO – LOAD:** When 70% and 120% of rated voltage is applied with no current flowing in current circuit, the test output of the meter shall not produce more than one output pulse/count.

**4.4 AUXILIARY POWER:** The power shall be drawn from any of three phases and the meter should be able to remain powered up if any two phases or any one phase and neutral are available.

**4.5** **INFLUENCE QUANTITIES:** The meter should be designed and protected such that all external effects and influences shall not change its performance and shall work satisfactorily within guaranteed accuracy limits, as specified in the latest relevant IEC standards.

**5.0** **GENERAL AND CONSTRUCTIONAL REQUIREMENTS :** Meter shall be designed and constructed in such a way so as to avoid causing any danger during use and under normal conditions. The following should be ensured:

- a) Personnel safety against electric shock.
- b) Personnel safety against effects of excessive temperature.
- c) Protection against spread of fire.
- d) Protection against penetration of solid objects, dust and water.
- e) Protection against fraud.
- f) Prevention against pilferage.

**6.0** **DISPLAY PARAMETERS:** The data shall be displayed on LED / LCD/ FIPS display (backlit type), which shall be clearly visible from distance in 7 segment- 7digits having minimum character height of 10 mm, wide viewing angle and additionally minimum 3 digits after decimal.. Auto display cycling push button required with persistence time of 10 Seconds It should be possible to easily identify the displayed parameters through symbols / legend on the meter display itself. **Dot-Matrix type LCD display is not acceptable.**

**6.1** **DISPLAY PARAMTERS AND SEQUENCE:** The meter shall be capable of measuring and displaying the electrical quantities within specified accuracy limits for poly phase balanced or unbalanced loads as per provision of IS:15959 with latest amendment. Besides the display parameter described in the IS which are to be provided in the pushbutton mode following shall be provided in the auto display mode.

- (i) **Date**
- (ii) **Time**
- (iii) **KWH cumulative**
- (iv) **KVAH Cumulative**
- (v) **KVA Maximum demand during the month**
- (vi) **KW Maximum demand during the month**
- (vii) **Three Phase power factor**
- (viii) **Frequency**

**6.2** **Meter Reading at Power Outage:** Provision to read the meter in no power condition shall be made. The same push button shall be used for display the readings during power outage. A suitable internal/ external device could be used so that display of readings could be possible at least twice considering that continuous power outage will not be for a period of exceeding 24 Hrs. Reading through MRI shall also be possible in power outage condition.

**6.3** An operation indicator in the form of blinking optical signal shall be provided to indicate that the meter is operating satisfactorily. Tenderers may confirm whether the blinking optical signal is of weighted pulse and this shall be effectively used for verification of accuracy. The Tenderers shall also confirm whether the intensity of blinking signal is sufficient for detection by the optical sensor.

**6.4** **MAXIMUM DEMAND REGISTRATION:**

**6.4.1** Maximum demand computation shall be update based on Block window concept with integration period of 15 minutes programmable. Cumulative MD should be available on the meter display data & BCS as well.

**6.4.2** The push buttons for meter reading and MD resetting should be clearly distinguished and physically spaced apart.

**6.4.3** Provision should be made for automatic reset of maximum demand at the end of pre-defined period (say at a specific date of month) as per Indian companion specification.

**6.4.4** Provision shall be made to seal the MD reset push button.

**6.5** The MD integration cycle shall be on the basis of real time. However, the real time clock of the meter shall be used only for the purpose of time matching. For computation of maximum demand an internal clock of the meter shall be made use of.

**6.6** A lithium battery of adequate storage energy shall be used for energy supply to real time clock during no voltage or power off condition.

**6.6.1** Under battery weak condition an indication shall appear on the display or on MRI / Laptop. The life of the lithium battery for supplying energy to real time clock during no voltage or power off condition would not be less than 10 years.

**6.7.1** **REAL TIME INTERNAL CLOCK (RTC):** RTC shall be pre-programmed for 30 Years Day/date without any necessity for correction. The maximum drift shall not exceed +/- 300 Seconds per year.

The clock day/date setting and synchronization shall only be possible through password/Key code command from one of the following:

- a) Hand Held Unit (HHU) or Meter testing work bench and this shall need password enabling for meter;
- b) From remote server through suitable communication network or Sub-station data logger 'PC'.

**6.7.2** **BILLING REGISTERS/ MD RESET:** As per Indian Companion Specification each register shall have an associated billing/history register. When a billing operation occurs, the contents of the rate registers shall be transferred to there billing/history equivalents.

It should be possible to reset MD by

- a) Local push button

Only one manual billing operation shall be possible in any given 15 minutes. Subsequent presses of the MD reset button shall be ignored if a manual billing operation has already occurred within 15 minutes.

- b) Auto reset at 24:00 hrs at the end of each billing cycle

**6.8** The meters shall have the provision to power up the meter in absence of power through an external source for meter reading purpose as per provision of G-14 of IS 14697 / 1999. An inductive coupling arrangement shall be provided so that it should not be possible to damage the circuit of the meter by applying excess voltage directly in the meter. Alternatively internal battery (automatic rechargeable) shall be provided to read the meter in the absence of AC supply.

**6.9** Meters covered under this specification shall be fully static type with non-volatile memory to register various billing parameters and complete with other features as detailed out in this specification. Any other design meeting technical specification requirements or features / accuracy etc. better than this specification requirement manufactured as per relevant IEC/ IS shall also be acceptable. The meters shall make use of Non volatile memory, (NVM) capable of storage of billing and tamper data, there shall be no battery back up for the retaining of data.

**6.10** Meters shall be suitable for accurate measurement and display of energy and other billing parameters within the specified limits of errors under balanced and unbalanced loads conditions in a poly phase network.

**6.11** Computation of apparent energy shall be as per prevailing CBIP guidelines, on the principle of :-

$$S = \sqrt{(P_a + P_b + P_c)^2 + (Q_a + Q_b + Q_c)^2}$$

Whereas S – Apparent Power, P – Active Power, Q – Reactive Power,

a,b,c – Three Phases

KVAh computation should invariably be on Lag+Lead logic.

**6.12** Dial multiplying factor shall be unity.

**6.13** The meter shall be fully programmable by the user for TOD timings and billing dates etc.

**6.14** Once finalized, the meter constants shall be freezed and it shall not be possible by the manufacturer or the user to alter the meter constants at factory or at site.

**6.15** Provision shall be made to down-load various billing parameters and also load survey data through a meter reading instrument. This arrangement can be through an optical coupler or any other suitable device as

per relevant IEC IS & CBIP Report 325 galvanically isolated from meter circuit. Provision shall be made to seal the optical coupler to ensure proper security.

**6.16** The design of the meter shall be bi-directional i.e. the meter shall record active, re-active & apparent energy in both export and Import mode. The meter should work accurately irrespective of phase sequence of mains supply.

6.17 Provision shall be made for push button to initiate display parameter in the front of the meter.

**7.0 TAMPER AND FRAUD PROTECTION/MONITORING:** The meter shall work satisfactorily under presence of various influencing conditions like External Magnetic Field, Electromagnetic Field, Radio Frequency Interference, harmonic Distortion, Voltage/Frequency Fluctuations, and electromagnetic High Frequency Fields etc. The meter shall be immune to abnormal voltage/frequency generating devices and shall record the occurrence and restoration of such tamper events along with parameters such as current, voltages, kWh, power factor, event code, date & time etc. as listed in ICS with latest amendments.

Tamper details shall be stored in internal memory for retrieval by authorized personnel through either of the following:

- i) HHU.
- ii) Remote access through suitable communication network.

Minimum 200 numbers of events (occurrences & restoration with date & time) should be available in the meter memory.

Logics for design of above indicated tamper, the value of voltage, current, time etc. selected for design of tamper logics shall be provided/ described in detail by the supplier/bidder and shall be customize in consultation with the purchaser if desired.

The meter has to record all authenticated transactions performed as per ICS.

**8.0 Security:** The security level of the offered meters shall be as per Indian companion specification.

**9.0 TOD Tariff / Demand:** The meter shall be capable of registering time of day energy consumption data on stand-alone basis as per provision of Indian Companion Specification. The meter shall be provided with an internal time clock and timer both controlled by a Quartz Crystal with a Battery, totally independent of power supply and shall be capable of being set into a minimum of 8 time zones in 24 hours cycle to cover morning and evening peak and off peak period separately.

It should be possible to change the time period for these registers through the hand held meter reading device with special authenticated command from the BCS so that only authorized person(s) can make such changes. The main control for this change should be available on the computer located at the purchaser's authorized office.

**10. Load survey capability:** It should be possible to retrieve load survey data by hand held meter reading device through the communication port provided on the energy meter as per the requirement indicated in ICS. Out of the above-indicated parameters included in the load survey capability, it shall be possible to select any parameters for load survey data. To clarify, the load survey memory shall be capable of accommodating and storing every 15 minutes data of at least for parameters specified above for minimum 35 days and should be configurable through CMRI. The Load Survey Integration Period shall also be configurable by user.

**11. BILLING POINT REQUIREMENTS :** The predefined date and time for registering the billing parameters of active, reactive, apparent energies of import and export along with its supported TOD registers and MD / TOD MD as well as Tamper Count and Power On hours readings shall be at 00.00 hours of the first day of each calendar (billing) month or any predefined date of the month. All billing parameters shall be transferred to billing registers as per the provisions of Indian companion standard.

The above billing data, TOD register's data, load survey data, tamper information and instantaneous parameters data shall all be retrievable through the meter's communication port through a common meter reading instrument (CMRI) or via an externally connected PSTN/GSM/GPRS/VSAT Modem and shall be transferred (downloaded) to a PC with Windows based software to get complete details in numerical and / or graphic form. The necessary DLMS compliant base computer software (BCS) for this purpose shall be provided by the supplier with complete details. No separate cost will be borne by the purchaser on this account.



Further, apart from instantaneous parameters like voltage, current, PF, and readings of billing parameters, energy registers, TOD registers etc, the Billing Parameters for last 6 Histories & MD reset count should also be made available at the BCS end as per ICS.

Meters shall be four Quadrants Meter, capable of recording active / reactive and apparent energy and also demand in four Quadrants. Main register readings & TOD register readings should contain total as well as fundamental energy value. All energy & demand values i.e. KWH,KVAH & KVA , should be available in TOD registers also.

Every transaction done on the meter related to tariff shall be logged in the 'Events' section of the meter data, with the details of Tariff Name and time and date of transaction.

Every transaction shall be logged in the meter. TOD should be programmed by the manufacturer as per existing TOD tariff, for which time slot shall be as under:-

Normal period	5:00 AM to 6:00 PM
Evening Peak load period	6:00 AM to 11:00 PM
Off Peak load period	11:00 PM to 5:00 AM next day.

Any change in TOD slot shall be programmable in the meter.

Meters shall be designed to withstand at least EMI – EMC level IV in accordance with applicable classes in IEC-61000 PART-II, III & IV. It is obligatory on the part of Tenderer to confirm that requirement and also to submit a type test / test report conforming successful.

12. **Out-put Device:** The meters shall have a test out put in the form of a blinking LED for testing of the meters accuracy. Testing shall also be possible through optical port accessible from the front and can be monitored with a high-resolution display in the meter or through MRI.
13. **Communication Capability:** The meter shall be provided with two ports for communication of the measured/collected data as per ICS, i.e. a hardware port compatible with RS 485 specifications which shall be used for remote access through suitable Modem (GPRS/GSM/EDGE/CDMA/PSTN/LPR) and an Optical port complying with hardware specifications detailed in IEC-62056-21. This shall be used for local data downloading through a DLMS compliant HHU.  

The RS 485 port shall be used at Substations suitable for multi-drop connections of the meter for exporting data to sub-station data logger/DCU/Computer and the remote end server. Both ports shall support three layer connection oriented COSEM/HDLC profile with minimum and default baud rate of 9600 bps.
14. **BASE COMPUTER APPLICATION SOFTWARE:**  

Necessary DLMS compliant common software for the IBM compatible computer as described below to obtain various details as discussed above shall be provided by the supplier. No separate cost will be borne by the purchaser on this account.
15. **Additional Features of the meter:**
  - i) Meters shall have provision for testing of meters in the meter testing laboratory or testing of meters at site with the help of electronic substandard meters and phantom load test set (in order to reduce the testing time of meter particularly for verification of demand suitable facility shall be provided through meter reading instruments).
  - ii) Meter shall operate and record satisfactorily independent of phase sequence of input supply so long as phase association between voltage and current circuits is in order.
  - iii) The performance of meter should not be affected by the external electromagnetic interference such as electrical discharge of cable and capacitor, harmonics, electrostatic discharge, external, magnetic field and injection of D.C. current in A.C. Circuits etc.
  - iv) No setting point / setting register etc. shall be provided for adjustment of measurement errors.
  - v) Meter shall have scroll lock facility to lock required display parameter(s) from push button.
  - vi) Phase indicators shall be provided on meter display to show healthiness of the phase voltage. The state of these indicators to show abnormal electrical connections at meter terminals.
16. **Construction of The Meter:** Body of the meter shall be designed suitable for projection mounting. The meter should be made of high quality of engineering plastic to ensure higher reliability and longer life.

The meter should be compact and reliable in design e.g. to transport and immune to vibration and shocks involved in transportation handling. The construction of the meter shall be suitable for its purpose in all respect and shall give assurance of stable and consistent performance under all conditions especially during dust storms / heavy rains / very hot days.

All insulating material used in the construction of meter shall be non-hygroscopic, non-ageing and tested quality. All ports that are likely to develop corrosion shall be effectively protected against corrosion. The construction of the meter shall be such as to be sealed independently and prevent unauthorized tampering.

The main body of the meter shall be sealed i.e. ultrasonic welded and should not be possible to open the body by screwdriver etc.

Meters described above shall be installed in Sub-stations / lines / HT consumer's premises out door inside a meter box directly under the sun and extreme weather conditions. Meter shall conform to the degree of protection IP-51 of IS 12063/ IEC 59 for protection against ingress of dust /moisture and vermins.

17. **Sealing of the Meter:** Proper sealing arrangement shall be provided on the meter to make it tamper proof and avoid mishandling by unauthorized person. At least two (2) seals on the body, 2 Nos. tamper evident sticker seals between the base and cover of the meter body, two (2) seals on the terminal block cover and one seal each on MD Reset knob and communication port shall be provided. All the seals should be provided on front side only. Rear side sealing arrangement will not be acceptable. In addition to above, the guidelines regarding sealing of meters shall be followed as mentioned in the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006.

On the meter body one seal shall be provided with good quality 7 digits numbered polycarbonate seal or any superior body sealing arrangement with embossing on sides, one side with the logo of firm and other side "CSPTCL". The Nos. of the seal shall be unique and should not be repeated in any case. Access to the working part should not be possible without breaking the seals. The Polycarbonate seals shall have proper locking to avoid opening of the seal in any case by means of tampering.

Meter body cover and base shall be solidly welded (seamless) such that it should not be opened without breaking the meter body. The holes for sealing wire may be 3 mm. or better.

Hologram sticker seals (min. two) should be provided by the meter manufacturers on joint of meter base with meter cover. The manufacturer shall have patent for such sticker seals.

**Caution to consumer about tampering of seal is an offence under Electricity Act 2003 to be printed on the meter security seal.**

18. **TERMINALS & TERMINAL BLOCK :** The meter shall have brass or tinned plated brass terminals and the holes in the insulating material, which form an extension of the terminal holes. To accommodate the insulation of the conductors and shall be of adequate length in order to have proper grip of conductors/crimping pins with the help of two screws, such that there is no risk of loosening or undue heating. Screw connections transmitting contact force and screw fixing which may be loosened and tightened several times during the life of meter shall be such that the risk of corrosion resulting from contact with any other metal parts is minimised. Electrical connections shall be so designed that contact pressure is not transmitted through insulating material. For current circuit, the voltage is considered to be the same as for the related voltage circuit. The terminal block shall satisfy all the conditions such as clearance and creepage distance between terminals and surrounding part of the meter as specified in relevant ISS.

19. **Terminal Block Cover:** The terminal block cover for the meter shall be extended transparent type, which can be sealed independently and over the meter body. The terminal cover shall enclose the actual terminals, the conductor fixing screws and 10 mm of the external conductors and their insulation for which the terminal cover shall be of extended type. The terminals shall not be accessible without removing the seals of the terminal cover when energy meter is mounted on the meter board.

20. **Connection Diagram & Terminal Marking:** The connection diagram of the meter shall be clearly shown on inside portion of terminal cover and shall be of permanent nature. Meter terminals shall also be marked and this marking should appear in the above diagram.

Meter shall have a name plate clearly visible, effectively secured against removal and indelible and distinctly marked with all the essential particulars as per relevant standards i.e.

- i) Meter serial number

- ii) Manufacturer's name and trademark
- iii) Type and description
- iv) Accuracy class
- v) Rated current, voltage and frequency
- vi) Relevant ISS / IEC No. Should be printed alongwith ISI certificate mark
- vii) Meter constant shall invariably be indicated duly printed
- viii) Name of the owner, purchase order no. and date and month / year abbreviated shall be printed :-

Owner	P.O.No. & Month	Date/ year	Tender No
CSPTCL			

- ix) Guarantee period
- x) Principle unit in which the meter records in KWh, KVAh, KVARh.

**21. Tests:**

**21.1 Type Tests:** The meter shall be type tested at any NABL accredited lab as per relevant standards (with latest amendments) or CBIP report No.325. Type test certificate from educational institute(s) will not be accepted. The meter offered should have successfully passed all type tests described in the IS 14697 and complied to IS 15959: 2011 with latest amendments. Type test certificate as per IS 14697 and DLMS compliant certificate (from CPRI) shall be submitted along with the offer at the time of bid submission.

**21.2 Routine Tests:** All routine tests as per IS-14697, IEC 62053-22, & CBIP report No.325 shall be carried out on all the meters.

**22. Inspection/Sample approve:- Meter should be tested at the CSPTCL's MRT Lab and sample to be approved before supply the material at Stores. If found in order as per GTP then only material can be accepted.**

**23 Guaranteed Technical Particulars:** The bidder shall furnish all the necessary information as desired in the schedule of Guaranteed Technical Particulars and data, appended at Schedule-IV of this specification. If the bidder desire to furnish any other information(s) in addition to the details as asked for, the same may be furnished against the last item of this Annexure.

**24. Packing And Forwarding:** The meters shall be packed in cartons / crates suitable for vertical/horizontal transport as the case may be, and suitable to withstand handling during transport and outdoor storage during transit. The supplier shall be responsible for any damage to the equipment during transit, due to improper and inadequate packing. The easily damageable material shall be carefully packed and marked with the appropriate caution symbol. Proper arrangement for lifting, such as lifting hooks or handles etc., shall be provided. Any material found short or broken inside the packing cases shall be supplied immediately by supplier without any extra cost.

The packing shall be done as per the manufacturer's standard practice. However, packing should be safe and water-proof and manufacturer should ensure the packing is such that, the material should not get damaged during transit by Rail/Road.

**25. Replacement Of Defective Meters:** The meters declared defective by the consignees and/or by meter testing lab shall be replaced by the supplier up to the full satisfaction of the purchaser at the cost of supplier within one month of intimation by purchaser/stores officer.

**26. Maintenance & Guarantee:** The guarantee shall be for a period of two and half (2½) years from the date of receipt of material in Store. **The bidder shall replace the defective meters at the purchaser's stores within a period of 60 days from the date of intimation from the concerned Area Store or from the CSPTCL. In case defective meters are not replaced in stipulated period the penalty as per clause of delay in delivery shall be applicable.**

**27. After Sales Service:** In order to provide prompt and smooth after sales support / service etc. it shall be preferred to post / engaged an engineer preferably at Raipur by the manufacturer's, who shall be fully conversant with the manufacturers meters, to attend any minor defects immediately and to educate the users about proper installation of meters and programming of MRI, base computer, taking reading, billing data's, load survey, tamper information etc. through MRI and down load to PCs to get print outs etc.

**S.E. (I)**  
**O/O C.E.(S&P), CSPTCL: RAIPUR**