



## **CORRIGENDUM- IV**

**Ref:**

**(1) TENDER NOTICE No. 28/2010-11**

**(2) TENDER SPECIFICATION No. Sr.G.M-CPC-TENDER-0.2s ACC CLASS AC STATIC ABT COMPLIANT TRIVECTOR ENERGY METER SUITABLE FOR ENERGY ACCOUNTING/AUDITING & INTERFACE METER,ERECTION,TESTING & COMMISSIONING & COMPREHENSIVE AMC (FOR 07 YRS) – 36/2010-11.**

**(A) Due date of selling and opening (Techno-commercial -Part-I) of the aforesaid Tender is extended as indicated below.**

**(1) Tender papers shall be sold up to 20.01.2011 and last date of receipt of bid document on 21.01.2011 up to 1:00 PM .**

**(2) Date of Opening of the Tender (Part-I) on 21.01.2011 At 3.30 PM.**

(B)

REPLIES TO QUERIES/REQUEST RAISED BY THE FIRMS DURING PRE-BID CONFERENCE ON 29.10.2010.

Sl. No.	Clause No.	Queries	OPTCL response
1	4.4.(iii)	To be modified to “as per IS Spec 1.5w per phase and 10VA per phase”.	It will be one watt per phase and one VA per phase as per our Technical specification.
2	4.19	This requirement contradicts the basic ABT measurement and recording requirement.	The Meter shall have provision to compute apparent energy based on lag+ lead. The same shall be configured at factory end.
3	4.27	The graphical display shall be capable to show vector diagram harmonics & other display parameters should be possible only on the BCS.	The down loading graph display on the BCS is acceptable subject to the condition that the software and other accessories is provided by the firm free of cost.
4	4.32	With external Hand Held, power Source may be accepted.	Not agreed. It should be as per our specification.
5	4.37	The same functionality can be achieved by using external test terminal block. The mechanical arrangement and termination is not covered under the scope of IS:14697 requirement.	Not Agreed. It should be as per our specification.
6	SCOPE (m)	Energy Accounting/Auditing and Interfacing are two different applications, which is not possible to achieve in a single meter.	The meters are to be of category-B(DLMSCompliant) for use in network boundaries . Both export & import are to be recorded separately.
7	SCOPE(s)	can provide an Excel file containing Meter serial Nos. with Seals serial Nos.	Acceptable.
8	SCOPE (r)	Request to keep the scope of work for the meter manufacturer as supply of meters only. For installation and AMC separate tender may be floated.	Not acceptable to OPTCL. The supplier will do the installation and will also provide AMC for 7 years after the guarantee period of 3 years.
9	SCOPE (s)	Can provide an Excel file containing meter serial nos. with seals serial Nos.	The Excel file containing meter Sl. No. with Seal Sl. Nos. is acceptable.
10	Applicable standards	Whether the CMRI is in the scope of Supply or not.	CMRI is not in the scope of the tender.

11	4.22	Since meter is self powered auxiliary supply is not required. Since it is only a measuring equipment, continuous power supply during power off condition is not required as available in protective relays. For checking the display during power off condition internal battery has been provided.	The internal battery can down load the data of about last 10 days but not of 35 days. Hence auxiliary supply is to be provided.
12	PRINCIPAL PARAMETE RS-7	Meter body being offered is made of Engineering Plastic / Polycarbonate. Hence earthing provision not required and will not be provided.	If the meter body is plastic or body poly carbonate earthing may not be required but functional earthing in the metering system if required is to be done.
13	4.1	Specify the exact sealing arrangement required. Also specify the No. of seals to be provided by the Manufacturer.	Sealing are to be provided by the manufacturer where possibility of accessibility to the metering system and its external wires.
14	4.21	Two separate pulse LED outputs are provided – one for Active, one for Reactive.	As per the pulse LED for active and re-active energy meter calibration is acceptable. The specification will be amended and accordingly uploaded in the web site.

15	4.27	Meter display is of Seven Segment LCD display, vector diagram can not be displayed.	If the firm can not provide display on the meter then they have to provide software to down load the vector diagram and harmonics and other parameters as specified in the specification.
16	4.32	Ass per DLMS, either RS485 or RS232 port is to be provided. Ethernet port is not in DLMS scope.	As per revised Tech Spec
17	4.34	Withstand capability is as per IS14697.	It should be as per specification as also in line with IEC-62053
18	4.36	CT & VT error compensation not provided.	Now it is deleted in the revised specification.
19	4.16,424, 4.29.4.17, 4.18	ABT & TOD compliant not provided	Meter shall be ABT compliant-Catagory”B” DLMS compliant.
20	4.26	MD reset cannot be provided	To be provided
21	4.28	Display parameters	In line with DLMS
22	4.29	Load survey upto last 22 days	Load survey to be provided upto last 35 days.
23	4.30	Billing parameters are not supported in Catagory A (DLMS) meters.	Billing para meters are not supporting category A (DLMS)meters. This is acceptable.
24	4.31	Daily midnight parameters are not supported in Catagory A meters.	Now our revised specification for Catagory”B” type Energy meter of DLMS compliant.
25	5.0	Meter can detect and log only Phase wise missing Potential with date and time, other Tamper can not be logged.	As per our specification.

**( C) REVISED TECHNICAL SPECIFICATION:**



**ORISSA POWER TRANSMISSION CORPORATION  
LTD  
OFFICE OF THE SR. GENERAL MANAGER,  
CENTRAL PROCUREMENT CELL,  
JANPATH, BHUBANESWAR - 751022**

**TENDER SPECIFICATION:-**

**NO. SR.G.M.-CPC-TENDER-0.2s ACCURACY CLASS  
A.C STATIC (Microprocessor based) ABT COMPLIANT ENERGY  
METER(Catagory-B, DLMS Compliant) - 36 /2010-11**

**FOR  
PROCUREMENT OF  
0.2S ACCURACY CLASS A.C STATIC METERS, ERECTION,  
TESTING & COMMISSIONING & COMPREHENSIVE  
AMC(FOR 07 YRS).**

## **PART – II (PRICE BID)**

### **1. PRICE:**

- (i) Bidders are required to quote their price(s) for goods offered indicating they are 'FIRM'
2. The prices quoted shall be FOR Destination only at the consignee's site/store inclusive of packing, forwarding, Freight & Insurance. In addition, the break-up of FOR Destination price shall be given as per schedule of Prices in Annexure-V of Section – III. The Bidder has to certify in the price bid that MODVAT benefit if any, has been fully passed on to the Purchaser, while quoting the tender prices.
3. Destination of Delivery of materials: Within the jurisdiction of Orissa and shall be intimated at the time of issuing of despatch clearance (**materials are likely to be delivered at EHT,Store,Mancheswar,BBSR or any place inside Orissa state**).

### **4. INSURANCE :**

Insurance of materials/equipments/materials, covered by the Specification should normally be done by the Suppliers with their own Insurance Company unless otherwise stated. The responsibility of delivery of the materials/equipments/materials at destination stores/site in good condition rests with the Supplier. Any claim with the Insurance Company or Transport agency arising due to loss or damage in transit has to be settled by the Supplier. The Supplier shall undertake free replacement of equipments/materials/materials damaged or lost which will be reported by the Consignee within 30 days of receipt of the equipments/materials/materials at Destination without awaiting for the settlement of their claims with the carriers and underwriters.

### **5. CERTIFICATE FOR EXEMPTION FROM EXCISE DUTY/SALES TAX:**

Offers with exemption from excise Duty/ Sales tax shall be accompanied with authenticated proof of such exemption. Authenticated proof for this clause shall mean Photostat copy of exemption certificates, attested by Gazetted Officers of State or Central Government.

### **6. PROPER FILLING UP OF THE PRICE SCHEDULE:**

- (i) In case where Freight & Insurance charges are not furnished, 5% of the Ex-works price shall be considered as the freight & Insurance charges.
- (ii) The Bidder should fill up the price schedule (Annexure-V of Section-III) properly and in full. The tender may be rejected if the schedule of price is submitted in incomplete form as per clause-34 (ix) of Section-II of the Specification.

**7. NATURE OF PRICE INDICATED IN SPECIFICATION SHALL BE FINAL.**

The nature of price indicated in the Clause-13, Section – I of PART –I of the Specification shall be final and binding.

**SCHEDULE OF PRICES**

**NO. SR.G.M.-CPC-TENDER-0.2s ACCURACY CLASS A.C STATIC ABT compliant ENERGY METER Catagory-"B"(DLMS Compliant) and 0.2s ACCURACY CLASS A.C STATIC FOR ENERGY ACCOUNTING &AUDITING Catagory-"A"(DLMS Compliant) METERS- 36/2010-11**

Item No.	Description.	Unit	Qty	SUPPLY in INR Rs.									
				Unit Ex-factor Price.	Unit Packing & Forwarding.	Unit Freight Charges.	Unit Insurance Charges.	Unit landing cost at destination store/site excluding ST,ED & Entry tax.	Unit E.D	Unit S.T.	Unit Entry Tax.	Unit landing Cost including All taxes & Duties.	Total landing cost Including all taxes & duties.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	#	Nos.											

ERECTION cost in INR Rs.		AMC cost in INR Rs,			Grand Total amount in Rs.
Unit Erection cost in Rs.	Total Erection cost in Rs.	Unit rate of AMC/Year in Rs.	Total amount AMC/Year in Rs.	Total AMC amount for 7 years in Rs.	<b>14+16+19</b>
15	16	17	18	19	
					20

**#: 0.2s ACCURACY CLASS A.C STATIC ABT compliant ENERGY METER category "B" DLMS Compliant.**

- \*\* 1. Bidders are requested to attach the details of latest version equipment along with the Techno-commercial documents for comparison.**
- 2. Bidders are requested to Quote Both for supply,etc as well as AMC for ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters scheme,Failing which their Bids shall not be evaluated.**
- 3. Bidders are requested to Quote in a separate annexure, their detailed break-up of prices Quoted above for AMC charges. The Break-up price for AMC shall be as Preventive Maintenance(P.M) PLUS Break down Maintenance (B.M)**

Signature of Bidder  
Name, Designation and Seal



# **SECTION – IV**

**TECHNICAL SPECIFICATION FOR  
0.2s ACCURACY CLASS A.C STATIC (Microprocessor Based)  
ABT COMPLIANT ENERGY METER(Catagory-B, DLMS  
Compliant) & ERECTION, TESTING & COMMISSIONING &  
COMPREHENSIVE AMC (FOR 07 YRS).**



**ORISSA POWER TRANSMISSION CORPORATION  
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METER (Category-B, DLMS Compliant) and ERECTION, TESTING  
& COMMISSIONING & COMPREHENSIVE AMC (FOR 07 YRS).-**

**36 /2010-11**

**SECTION – IV: TECHNICAL SPECIFICATION**

**TECHNICAL SPECIFICATIONS FOR 0.2s ACCURACY CLASS A.C  
STATIC ABT COMPLIANT ENERGY METER(Catagory-B, DLMS  
Compliant) and ERECTION,TESTING & COMMISSIONING &  
COMPREHENSIVE AMC (FOR 07 YRS).**

**1.0 SCOPE:-**

- a) This specification covers the design, engineering, manufacture, assembly, inspection and testing before supply and delivery at site/ FOR destination of class 0.2s accuracy, static(Microprocessor Based) , CT & VT operated meters, along with other associated equipment as per details given in this specification. *(The meters are to be of category B (DLMS open protocol) & Both export & import are to be recorded separately)*
- b) One static type composite meter shall be installed for each circuit, as a self-contained device for measurement of energy transmittals, as described herein, in each successive 15 minute block, and certain other functions, detailed in the following paragraphs.
- c) The number of meters with secondary rating (1 amp) to be commissioned at each substation shall be informed to the successful bidders. The meter should be 3 phase 4 wire type suitable for connection to 3 phase 4 wire as well as 3 phase 3 wire system.
- d) It is not the intent to specify completely herein all the details of the design and construction of material. The material shall, however, conform in all respects to the best industry standards of engineering, design and workmanship and shall be capable of performing for continuous commercial operation in a manner acceptable to the purchaser The offered equipment shall be complete in all respects including all components/ accessories for effective and trouble free operation according to the specifications. Such components shall be deemed to be within the scope of this specification irrespective of whether those are specifically brought out or not.
- e) The meter shall comply to DLMS(Device Language Message specification) open protocol , **Type-B (DLMS)** for 0.2S class ABT Compliant Energy Meters.

- f) The Bidder shall carryout the installations & commissioning of the meters as per the requirement of OPTCL and the Annual maintenance of these meters for seven years beyond the guarantee period of three years as specified in Tender specification.
- g) A tracking & recording software for all new seals shall be provided by the manufacturer of the meter so as to track total movement of seals starting from manufacturing,procurement,storage,record keeping,installation. Alternatively, *the Meter serial Nos with seals serial nos can also be maintained in Excel file.*
- h) As per the ABT requirements, to be complied with by OPTCL, the following user requirement should be maintained:-**
- 1) *The energy meter should be complied with DLMS open protocol.*
  - 2) *The computer installed in the sub-station, on sub-station ethernet LAN, should be able to download the energy meter datas at the end of every predefined demand intigration period as per the regulatory requirement.*
  - 3) *The physical connectivity of the meter on to the sub-station LAN, should be supported as part of connectivity features of the energy meter.*
  - 4) *Open software component to be resident on the local computer installed on the sub-station LAN, on Windows/LINOX opearting system should be supplied along with the energy meters. The software, as above should be able to convert the energy data downloading into ASCII datacode compliant, csv (common service value) files for further uploading into central server of the OPTCL.*
  - 5) *The enrgy meter data should be secure & tamper proof. Provision should be made for verifying the energy data for its correctness by stake holders of OPTCL.*
  - 6) *The downloading of data from the energy meter through the open software should be accomplished instantly, so that the central server further download all interface meters energy datas, well before compleetion of immediate next demand intigration period.*
  - 7) *The energy meter should be scalable & capable to retain energy datas of 35(thirty five) days with demand intigration period, revised downward from present 15 minutes period.*
  - 8) *Provision shall be made for downloading all the parameters for DLMS compliant B category energy meter (Instantaneous,Block load profile,Daily load profile parametrs).*

## 2.0 APPLICABLE STANDARDS

The equipment shall conform (for testing, performance and accuracy) in all respects the relevant Indian/ International metering standards with latest amendments thereof unless otherwise specified.

S. No.	Standard No.	Title
1.	IEC62056-22 & IEC 62053-22	AC Static meters for active energy, class 0.2s .
2.	IEC 62056-23 & IEC 62053-23	AC Static meters for reactive energy
3.	IEC 62056-31	Electricity metering:Data exchange for meter reading,tariff & load . Use of LAN
4.	CBIP technical report no. 88	Specification for AC static electricity energy meters .
5.	IS 14697-1999. DLMS companion standard	AC static transformer operated Watt-hour and VAR-hour meters for class 0.2s. DLMS compliant category "B" (ABT compliant) metering
6.	IEC 62052-11	General requirement of electricity metering equipment,tests and test conditions.

The original copies of the above standards and any other relevant standard required for the contract are to be supplied free of cost before execution of the work.

## 3.0 CLIMATIC CONDITIONS

The meters to be supplied against this specification shall be required to operate satisfactorily and continuously under the following tropical conditions of hot, humid, dusty, rust and fungus prone environment.

1. Max. ambient air temperature (°C) : 50
2. Min. ambient air temperature (°C) : 0
3. Average daily ambient air temp. (°C ) : 32
4. Max. Relative Humidity (%) : >95
5. Min. Relative Humidity (%) : 10
6. Max. Altitude above mean sea level (m) : 1000
7. Average Annual Rainfall (mm) : 1200
8. Max. wind pressure (Kg/Sq.m) : 195
9. Isoceraunic level (days per year) : 50
10. Seismic level (Horizontal Accn. in g) : 0.3

#### 4.0 PRINCIPAL PARAMETERS

The energy meter shall be indoor type connected with the secondary side of outdoor current and voltage transformers and to be mounted isuitably.

S. No.	Item	Specification
1.	Type of Installation	Indoor
2.	VT secondary	3x110/ $\sqrt{3}$ V Phase to Neutral (3P,4W),or 3x110 V Phase to Phase (3P3W),(as per requirement)
3.	CT secondary	1 Amp
4.	Auxiliary AC Supply	110 V (-15% to +10%)
5.	Auxiliary Supply	220 V DC(-10% to +10%)/ 230 V AC (-15% to +10%).
6.	System frequency	50HZ +/- 5%
7.	Earthing System	Solidly Grounded

The meter should be suitable for working with above supply variations without damage and without degradation of its meteorological characteristics.

#### 4.1 TECHNICAL REQUIREMENTS

##### POWER FACTOR RANGE

The metering system shall be suitable for full power factor range from zero (lagging) through unity to zero (leading). The metering module shall work as an active energy import and export meter along with reactive (lag and lead) meter. The reactive energy can be measured in four quadrants.

##### 4.2 Power Supply Variation:

The metering shall safely withstand the usual fluctuations arising during faults etc. In particular, VT secondary voltages 115% of rated applied continuously and 190% of rated for 3.0 Secs and CT secondary current 150% of rated applied continuously and 30 times of rated applied for 0.5 Seconds shall not cause any damage to or maloperation of the meters.

#### 4.3 ACCURACY

Class of accuracy of the metering system shall be 0.2s for energy measurement. The accuracy should not drift with time.

#### **4.4 POWER CONSUMPTION OF METER**

- (i) Voltage Circuit: The active and apparent power consumption in each voltage circuit including the power supply of metering module at reference voltage, reference temperature and reference frequency shall not exceed 1 Watt per phase and 1 VA per phase respectively.
- (ii) Current Circuit: The apparent power taken by each current circuit at basic current, reference frequency and reference temperature shall not exceed 1 VA per phase.

#### **4.5 STARTING CURRENT**

The metering module should start registering the energy at 0.1% Ib(base current) and unity power factor.

**4.6** The meter shall work accurately, irrespective of phase sequence of the mains supply.

#### **4.7 GENERAL CONSTRUCTIONAL REQUIREMENTS**

Meters shall be designed and constructed in such a way so as to avoid causing any danger during use and under normal conditions. However the following should be ensured:

- I. Personnel safety against electric shock.
- II. Personnel safety against effects of excessive temperature.
- III. Protection against spread of fire.
- IV. Protection against penetration of solid objects, dust and water in normal working condition.

All the materials and electronic power components used in the manufacture of the meters shall be of highest quality and reputed make to ensure higher reliability, longer life and sustained accuracy.

The meters shall be designed with application specific integrated circuits. The electronic components shall be mounted on the printed circuit board using latest Surface Mount Technology (SMT).

All insulating materials used in the construction of meters shall be non-hygroscopic, non-aging and of tested quality. All parts that are likely to develop corrosion shall be effectively protected against corrosion by providing suitable protective coating.

#### **4.8 MANUFACTURING ACTIVITIES**

Meter should be manufactured using SMT (Surface Mount Technology) components and by deploying automatic SMT pick and place machine and reflow solder process; the Bidder should own such facilities.

##### **Quality should be ensured at the following stages:**

- 1) At PCB manufacturing stage, each board shall be subjected to computerized bare board testing.
- 2) At insertion stage all components should under go computerized testing for conforming to design parameters and orientation.
- 3) Complete assembled and soldered PCB should under go functional testing using Automatic Test Equipment.
- 4) Prior to final testing and calibration, all meters shall be subjected to accelerated ageing test to eliminate infant mortality.
- 5) The calibration of meters shall be done in-house.

#### **4.9 SEALING**

Proper sealing arrangement(for front,rear and port etc) shall be provided in metering system .Sealing are to be provided by the manufacturer where possibility accessibility to the metering system and its external wires.

#### **4.10 MARKING OF METER**

The marking on every meter shall be in accordance with IS 14697/ IEC62056-22. The basic marking on the metering module name plate shall be as follows:

- i. Manufacturer's name and trade mark
- ii. Serial Number
- iii. Year of manufacture
- iv. Type Designation
- v. Number of phases and wires
- vi. VT commissioning information
- vii. CT commissioning information
- viii. Reference frequency
- ix. Accuracy Class

Additionally, following information shall also be available on name plate.

- a) Property Of "Purchaser name"
- b) P.O. No.( "Number") & Date.



#### **4.11 CONNECTION DIAGRAM**

The connection diagram of the metering module shall be shown on inside portion of the terminal cover via suitable means. The meter terminals shall be properly marked.

#### **4.12 METER CONNECTION & SAFETY**

The meters shall be suitable for being connected directly through its terminals to VT's having a rated secondary line- to- line voltage of 110 V & Line to Earth 63.5 V, and to CTs having a rated secondary current of 1A. Any further transformers/ transducers required for their functioning shall be in-built in the meters. Necessary isolation and/or suppression shall also be built-in, for protecting the meters from surges and voltage spikes that occur in the VT and CT circuits of extra high voltage switch yards.

**4.13** The active energy measurement shall be carried out on 3 phase, 4 wire principle with an accuracy as per class 0.2s of IEC 62056-22. The meters shall compute the active energy import; active energy export from the substation bus bars during each successive 15 minute integration period block and store it in its non volatile memory.

**4.14** The meter shall compute the average frequency during each successive 15 minute block and store in its memory.

**4.15** The meter shall compute the reactive power on 3-phase, 4-wire principle, with an accuracy as specified for 0.2 Class Acc Energy meter, and integrate the reactive energy algebraically into two separate reactive energy registers, one for the period for which the average RMS voltage is greater than 103% (Reactive High), and the other for the period for which the average RMS voltage is below 97.0% (Reactive Low).

**4.16** For reactive power and reactive energy measurement, limits of errors all the four quadrants shall be in accordance to IEC or IS which ever is better.

**4.17** Pulse LED output to be provided for Active and Reactive energy. As per the pulse LED for active & reactive energy meter calibration for checking the accuracy. This LED shall be visible from the front side.

**4.18** The meter shall normally operate with the power drawn through the auxiliary AC or DC supply. The metering system design should enable the auxiliary supply to be switched automatically between the AC and DC voltage, depending upon their availability. Typical auxiliary voltages available are 230V AC and 220V DC. The system shall continue to work even if any one of the above auxiliary supply (AC/ DC) is present.

**4.19** Each metering module shall have a built-in calendar and clock, having an accuracy as per latest BIS or IEC standard which ever is better. The calendar and clock shall be correctly set at the manufacturer's works.

An automatic backup for continued operation of the meter's calendar-clock shall be provided through a long life battery, which shall be capable of supplying the required power for at least two years under meter un-powered conditions. The meters shall be supplied duly fitted with the batteries, which shall not require to be changed for at least ten years, as long as total supply interruption does not exceed two years.

**4.20 Maximum Demand Reset:**

As per DLMS category "B" type meter.

**4.21** The display shall indicate direct values (i.e. without having to apply any multiplying factor) of measured/ computed parameters as per the meter commissioning. It should be possible to easily identify the single or multiple displayed parameters through legends on the metering system display. The graphical display shall be capable to show vector diagram, harmonics & other display parameters. The register shall be able to record and display starting from zero, for a minimum of 1500 hours, the energy corresponding to rated maximum current at reference voltage and unity power factor. The register shall not roll over in between this duration.

*In case the Firm cannot provide display on the meter than they have to provide software to down load the vector diagrams and harmonics and other parameters as specified in the specification.*

**4.22** Each of the metering module (**ABT Compliant**) shall display on demand the following quantities/ parameters:

- I. LCD segment check
- II. Date
- III. Time
- IV. Cumulative active energy import
- V. Cumulative active energy export

**4.23 DATA COMMUNICATION CAPABILITY:**

The metering system should have multiple communication ports for local reading and remote communication facility and also as provided under "SCOPE".

\* Refer details under Clause 1.0 SCOPE, sub clause "h".

**4.24** Each meter shall have a unique identification code i.e. serial number, which shall be marked on name plate as well as in its memory. Further all meters of the same model shall be totally identical in all respects except for their unique identification codes.

**4.25** The meter should be capable of storing all the 35 days datas as specified for Catagory”B” type meters under DLMS compliant.

**4.26** The energy meter should have an automatic backup for continued operation of the meter's calender-clock,retianing all datas stored in its memory, shall be provided through a long life battery, which shall be capable of supplying the required power for at least 2 years. The meter shall be supplied duly fitted with batteries, which shall not require to be changed for atleast 10 years, as long as total VT supply interruption does not exceed two years. The battery mounting shall be designed to facilitate easy battery replacement without affecting the PCB of meter.

**4.27** The meters shall be draw out type with automatic CT shorting feature so as to ease the testing/ replacement of meters without disturbing the system.

**4.28** Meter shall be provided with compatible software for time synchronisation. The Bidder shall also handover all the required software for smooth functioning of the metes of the system(Data down loading, callculation through software to achieve the energy computation etc) in line with the owners requirement free of cost to the owner and incase any updaing of software is required is also to be done by the bidder free of cost. In case any discrepancies is noticed for not getting required operation or data collection for calculation, the bidder has to carry out free of cost of such rectification in the software till achieving the required operation.

## **5.0 ANOMALY DETECTION FEATURES**

The meter shall have features to detect and log the occurrence and restoration of following anamolies, along with date and time of event:

- I. Phase wise Missing Potential – The meter shall detect missing potential (1 or 2 phases) provided the line current is above a specified threshold. The voltage at that stage would be below a specified threshold.
- II. Phase wise Current Circuit Reversal – The meter shall detect reversal of polarity provided the current terminals are reversed. This shall be recorded for 1 or 2 phase CT reversal.

- III. Voltage Unbalance – The meter shall detect voltage unbalance if there is unbalance in voltages.
- IV. Current Unbalance – The meter shall detect current unbalance if there is unbalance in load conditions. Meter should ensure true system conditions before going for current unbalance checks.
- V. CT Miss – The meter shall detect current miss if the current is below a defined threshold, provided the phase voltage is above a specified threshold.  
Snapshots of phase wise voltage, phase wise active current and phase wise power factor shall be provided with above specified anomaly events.  
Further, each meter module shall record the following events along with total duration:
- VI. Power On/Off – The meter shall detect power off if both the auxiliary supplies fail. The event shall be recorded on the next power up. At the same time power on event shall be recorded. No snapshot shall be logged with this event.
- VII. Feeder Supply Fail -This event shall be logged when feeder supply, i.e. all the voltages goes below certain threshold. No snapshot shall be logged with this event.
- VIII. Last hundred (200) events (occurrence + restoration), in total, shall be stored in the meter memory on first in first out basis.
- IX. There shall be four separate compartments for logging of different type of anomalies:(Voltage,current,power failure,transactional,other,control events etc)

Compartment No.1	60 events for Voltage related
Compartment No.2	60 events for Current related
Compartment No.3	60 events for other related
Compartment No.4	20 events for Power failure

Once one or more compartments have become full, the last anomaly event pertaining to the same compartment shall be entered and the earliest (first one) anomaly event should disappear. Thus, in this manner each succeeding anomaly event shall replace the earliest recorded event, compartment wise. Events of one compartment/ category should overwrite the events of their own compartment/ category only. Anomaly count should increase as per occurrence of anomaly events. Total no. of counts shall be provided on BCS.

## **6.0 SELF DIAGNOSTIC FEATURE**

The meter shall be capable of performing complete self diagnostic check to monitor the circuits for any malfunctioning to ensure integrity of data in memory location all the time. The meter shall have indications for unsatisfactory/ non functioning/ malfunctioning of the following:

- (i) Non volatile memory
- (ii) RTC battery

The above malfunctioning should be flagged in the meter memory and should be made available in meter reading data.

## **7.0 TYPE TEST CERTIFICATES.**

- (I) The meters shall be type tested as per IEC/IS/or in consultation with CPRI for DLMS open protocol meters. The type test report of the meters shall be submitted by bidder along with the offer. Type test reports shall not be more than 5 years old.
- (II) Acceptance Test: The acceptance test shall be done as per the recommendation of Latest IEC/IS/ or in consultation with CPRI.

## **8.0 TESTING:**

All energy meters after final assembly and before despatch from manufacturer's works, shall be duly tested to verify that is suitable for supply to the owner. In particular, each and every meter shall be subject to the tests as recommended by IEC for DLMS compliant energy meters. Test reports in details are to be provided to the owner for reference and record.

## **9.0 QUALITY ASSURANCE:**

The quality control procedure to be adopted during manufacturing of the specified equipment shall be mutually discussed and finalized in due course, generally based on the established and proven practices of the manufacturer.

## **10.0 INSTALLATION & COMMISSIONING:**

The energy meters specified above shall be installed at various EHV sub-stations owned by the owner and other agencies throughout Orissa. The exact location and time table for installation shall be finalized by the owner in due course, and advise to the contractor, such that contractor's responsibility in this respect should remain. The contractor shall be responsible for total installation and commissioning of the meters as per owner's advice, including unpacking and inspection on receipt at site, mounting the meters, connection of CT and VT and auxiliary supplies including any required rewiring, functional testing, commissioning and handing over. The contractor's personnel shall

procure/carry the necessary tools,equipment.materials and consumables(including insulated wires,lugs, ferrules,hardware etc.)

As a part of commissioning the contractor shall load the software as specified into the PC's at the respective sub-stations and fullt commission the total meter reading scheme. He shall also impart necessary training to the sub-station Engineers.

**11.0 ENERGY METER SHALL DLMS COMPLIANT CATEGORY “B” TYPE METER:  
The meter shall comply to DLMS (Device Language Message specification)  
category – B open protocol for 0.2S class Energy Meters.**

**1) Instantaneous Parameters:**

SI No	Parameters
1	Real Time Clock-Date & Time
2	Current-Ir
3	Current-Iy
4	Current-Ib
5	Voltage-Vrn
6	Voltage-Vyn
7	Voltage-Vbn
8	Voltage-Vry
9	Voltage-Vby
10	Signed Power Factor-R Phase
11	Signed Power Factor-Y Phase
12	Signed Power Factor-B Phase
13	Three phase power factor-PF
14	Frequency
15	Apparent Power - KVA
16	Signed Active Power – KW (+ Import: - Export)
17	Signed Reactive Power – Kvar (+ Lag: - Lead)
18	Cumulative Energy – Kwh (Import)
19	Cumulative Energy – Kwh (Export)
20	Cumulative Energy – KVAh (Import)
21	Cumulative Energy – KVAh (Export)

22	No of Power Failures
23	Cumulative power-failure duration
24	Cumulative tamper count
25	Cumulative Billing count.
26	Cumulative programming count
27	Billing date

## 2) Block load Profile Parameters:

SI No	Parameters
1	Real Time Clock-Date & Time
2	Frequency
3	Voltage-Vrn
4	Voltage-Vyn
5	Voltage-Vbn
6	Energy-Active Import
7	Energy-Net Active Energy-KWh
8	Energy-Active Export
9	Energy – Kvarh – Quadrant 1
10	Energy – Kvarh – Quadrant 2
11	Energy – Kvarh – Quadrant 3
12	Energy – Kvarh – Quadrant 4

## 3)Daily Load Profile Parameters.

SI No	Parameters
1	Real Time Clock-Date & Time
2	Cumulative Energy – Kwh (Import)
3	Cumulative Energy – Kwh (Export)
4	Cumulative Energy- KVAh while KW import
5	Cumulative Energy- KVAh while KW export
6	Reactive Energy high (V>103%)
7	Reactive Energy low (V<97%)

8	Cumulative Energy – Kvarh – Quadrant 1
9	Cumulative Energy – Kvarh – Quadrant 2
10	Cumulative Energy – Kvarh – Quadrant 3
11	Cumulative Energy – Kvarh – Quadrant 4

**\*\* Other parameters (Abstract Parameters) shall be in line with DLMS table:**

**Name plate details**

**Programmable Parameters.**

**Events(Voltage,current,power,transaction,control & others related)**



## GURANTEED TECHNICAL PARTICULARS

S. No.	Technical Specification Requirements	Bidder's Offer
1	Manufacturer's name & Country	
2	Type of Meter (3P4W or 3P3W)	
3	Name and model no. of offered product	
4	Standards to which meter complies	
5	Accuracy class 1. Active energy measurement 2. Reactive energy measurement	
6	Metrology indicator provided on meter and switching facility for active and reactive energy	
7	Variation of voltage at which system functions normally	
8	Minimum Starting current	
9	Maximum current (I) Continuous (II) Short time for 0.5 sec	
10	P.F. range	
11	Power consumption per phase 1. Voltage Circuit 2. Current Circuit	
12	AC and DC Auxiliary supply ratings for powering up the metering system	
13	Sealing arrangement	
14	Energy parameters recorded in meter	
15	<i>ABT compatibility</i>	
16	Communication Capability for 1. Local reading 2. <i>On line reading in the PC</i>	Yes/ No Yes/No
17	Anomaly detection features	
18	Self diagnostics features	
19	Protocol standard for communication	
20	Meter compliant to DLMS (catagory"B")	

### **SCHEDULE OF QUANTITY (Annexure-I)**

Serial No	Description of Materials	Unit	Quantity	Delivery Schedule
1	0.2s ACCURACY CLASS AC STATIC(Micro processor based) ABT COMPLIANT ENERGY METERS, (Catagorey-B, DLMS compliant)	Nos	1200	4 months from place of order

**ANNEXURE-III**

**SCHEDULE OF REQUIREMENT AND DESIRED  
DELIVERIES**

Sl. No.	Description	Quantity required	Desired delivery	Destination
1.	Catagory "B" DLMS compliant Energy meter	As per Tendered Qty	<b>04(Four)</b> months From the date of Placement of Purchase Order.	Any site store/destination substation/within State of Orissa

**SIGNATURE OF Bidder.**

**With SEAL**

**\*\*\* The Bidder has to fill up the GTP as indicated in the Technical specification and to be submitted along with the offer for the purpose of evaluation.**

# **SECTION – V**

## **COMPREHENSIVE AMC FOR 0.2S Acc Energy Meters (DLMS compliant category “B”)**

### **SCOPE OF AMC(Comprehensive) FOR above category Meters .**

**(I) Annual Maintenance Contract (Comprehensive)** for the meters to be provided in different Grid sub-stations for a period of **07(seven)years** beyond the Guarantee period(36 months from the date of commissioning) and shall have following scope:-

**(a) Preventive Maintenance** [Halfyearly(every six months)]: Contractor to Check Properly to ascertain the performance to the satisfaction of OPTCL in every six months of ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters. These inspections to be carried out in presence of OPTCL Engineer and contractor's representative. A report on inspection & testing along with the status of the ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters to be jointly signed for reference and record. In case any defects are noticed during Preventive Maintenance, such defects are to be rectified within 15 days.The materials/equipments required to rectify the defects are to be supplied by the Bidder free of cost to OPTCL.In case contractor fails to perform the Preventive maintenance within the scheduled stipulated time, the purchaser shall recover from the supplier/contractor a penalty for the delay as per the Penalty clause indicated below **(III-A)**.

**(b) Break down maintenance:**In case any defect is noticed, the Contractor shall be intimated by the owner, and Contractor shall attend the spot within 07 days from the date of intimation(Date of issue of Letter) positively and shall ascertain the defects and shall rectify the same within 15 days from the date of intimation(Date of issue of Letter) to the Contractor. In case Contractor fails to rectify the defects within the scheduled time, the purchaser shall recover from the supplier/ Contractor a penalty for the delay as per the Penalty clause indicated below **(III-B)**. The date of intimation to the Contractor regarding the troubles/defects of the ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters , shall be reckoned as the base date for computing the Penalty amount

**(II) TERMS OF PAYMENT:** (For AMC Contract of ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters )

The terms of payments under this contract shall be governed as per the following:

1. Your unconditional acceptance of this order.

2. A performance Bank Guarantee as per the proforma enclosed for 10% of the total Maintenance Contract price (**for 07 years**), which will remain valid for more than two months from the expiry of the contract period I.e, 86 months from the last date of the guarantee period. Initially, the BG shall remain valid for 18 months and the same to be revalidated from time to time to cover the entire guarantee period.
3. Payment will be made equally at the end of every six months, period starting from the date of contract agreement as per the details below:

(a) Release of payment for the 1<sup>st</sup> instalment:- The payment of 1st installments of each year are to be paid to contractor at the end of 6(six) months. All the ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters need to be Checked Properly under Preventive Maintenance (PM) to ascertain the performance to the satisfaction of OPTCL in every six months. This inspection to be carried out in presence of OPTCL Engineer and contractor's representative. A report on inspection & testing along with the status of ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters should be jointly signed and furnished to the verifying authority(Concerned A.G.M of O&M Division) for verification and onward transmission to the designated Nodal Officer. You have to furnish the draft format for the inspection/testing & Status report of the Bus-Bar scheme, which shall be approved by the C.G.M(O&M),OPTCL, Bhubaneswar.

(b) Similarly, the payment of 2<sup>nd</sup> installments of each year are to be paid to contractor at the end of 12(Twelve) months, during which the inspection of ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters to keep the schemes in a healthy and functional condition, shall be carried out by the Bidder, on production of documents as indicated above.

\* The payment for other years of AMC shall be as indicated above.

### (III) **PENALTY:**

(A) In the event of failure on contractor's part to comply with the provisions of the contract regarding attending to the **Break down** of the ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters at various grid substations as indicated elsewhere, a penalty @0.5% of the total contract value for each day of delay, or part thereof, for such delay, subject to no upper ceiling, will be levied, without prejudice to any other remedies to which OPTCL may also be entitled, under the provisions of the contract/bid specifications.

(B) In the event of failure on contractor's part to comply with the provisions of the contract regarding attending to the **Preventive maintenance** (PM) of the ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters at various grid substations as indicated elsewhere, a penalty @30% of the total AMC value for the period shall be imposed for that quarter.

**(IV) PERFORMANCE SECURITY:**

- (a) The contractor is requested to furnish a **composite bank guarantee** of 10% of the contract value in our standard bank guarantee format (as enclosed) towards security payment and performance from any Nationalised/Scheduled Bank having a place of business at Bhubaneswar on non-judicial stamp paper worth of Rs.29.00 (Rupees twenty nine) only or as applicable as per the prevailing laws. The said B.G. shall be accompanied with the confirmation letter from the issuing bank & should be capable of being encashed at Bhubaneswar, in order that the B.G. is accepted. The B.G. shall be furnished in favour of Senior General Manager (CPC), OPTCL, Bhubaneswar-751022 within 30 days from the date of issue of AMC order and shall remain valid for two months more than the expiry of the contract period. Where the contract is extended, the B.G. should also be suitably extended, to cover the entire contract period.
- (b) No interest is payable on the Composite Bank Guarantee.
- (c) In case of non-fulfillment of contractual obligation in any manner, performance bank guarantee shall be invoked without intimation to you.

**(V) GUARANTY:**

It will be contractor's responsibility to maintain the entire ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters, as described in the scope of the contract in healthy and functional manner. The repair and replacement work will be completed within 15 days from the registering of the complaints by OPTCL Engineers of the concerned Grid substations or AGM/DGM/GM of the concerned Division or Circles respectively failing which the penalty clause as at **clause-III** shall be applied. The replacement of equipments will be done by using materials from the stock to be kept under contractor's scope. Any equipment removed from the ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters location and taken for rectification, will be rectified and returned back to OPTCL at contractor's own risk and expense, within 15 days from the date of such removal. The date of removal will be reckoned as the date of handing over & taking over report jointly signed by OPTCL Engineer of the concerned Grid substations and contractor's representative.

- (a) An indemnity bond shall be furnished before receiving materials from OPTCL .
- (b) In case the materials are not returned back to OPTCL within 15 days , a penalty shall be levied on the contractor as per clause **III-B**. In case the Bidder did not return the materials taken from the ABT Compliant 0.2S Acc Energy Accounting and also Interface Meters the BG furnished towards the AMC shall be encashed without any intimation to you.

**(VI) NODAL OFFICER:**

A nodal officer shall be appointed by OPTCL, who will monitor the execution of entire maintenance activities within the scope of this contract. You will furnish all the records, reports, receipts etc., to the Nodal Officer, who will forward the documents, after due verification, for initiation of Halfyearly payment activities. The name of the Nodal officer shall be intimated during placement of order to the successful contractor.

**(VII) CONTRACT AGREEMENT:**

Contractor shall prepare and finalise the Contract Document for signing of the formal Contract Agreement with us, as per the proforma to be provided to you, on non-judicial stamp paper of appropriate value within fifteen days from the date of this order. The contract papers shall be prepared in 2(two) originals and copies shall be 1(one) no for each sub-station, where the Bus-Bar protection is proposed.

**(VIII) DURATION OF CONTRACT:**

This AMC shall be in force for a period of 07(Seven) Years, beyond the Guarantee period of 36 months as stipulated in the Specification.

**\*\* Important Instruction to Bidders:** Bidders TO FOLLOW THE BELOW DURING FILLING OF BIDDING DOCUMENT:

1. Bidders to quote the rate separately for Design, supply, installation, testing - commissioning and AMC separately as per the price format provided.
2. Bidders are requested to fillup the GTP's of all the Packages against each parameters positively.
3. **WORK OFF LOADED FROM FIRMS:** Firms from whom, OPTCL have off loaded works due to non-performance, during last **seven** years, shall not be eligible to participate in any of the OPTCL turnkey tenders.
4. The participant Firms shall submit an undertaking along with the price bid to the effect that any items missing/not quoted in the price bid, shall be executed free of cost by them without any financial liability to OPTCL and that the said undertaking shall cover all the evaluation criterion as recommended above. The condition of rejection of incomplete price bid appearing under the Outright rejection Criterion shall stand deleted.
5. The Bidder should furnish the un-priced schedule (un-priced Bid) along with the techno-commercial bid (Part-I of the Bid). All the columns shall be filled by quoting "Quoted" only.
6. Evaluation will be done on the basis of total amount taken together for rates quoted against (1) Supply, (2) Erection & (3) AMC.

----- END OF TENDER SPECIFICATION-----

**\*\*All other Terms and condition shall remain unaltered for TENDER SPECIFICATION No. Sr.G.M-CPC-TENDER-0.2s ACC CLASS AC STATIC ABT COMPLIANT TRIVECTOR ENERGY METER SUITABLE FOR ENERGY ACCOUNTING/AUDITING & INTERFACE METER,ERECTION,TESTING & COMMISSIONING & COMPREHENSIVE AMC (FOR 07 YRS) – 36/2010-11.**

**Sr. G.M,CPC,OPTCL.**