Maharashtra State Electricity Distibution Co. Ltd.

Tender Details	01-03-2021 07:17:40
Tender Code	MMD/T-NSC-02/0321
Tender Type	Procurement Tender
Type Of Bid	Two Bid
Description	Procurement of Three Phase Four wire CT/ PT operated 1Amp & 5Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.2S & 0.5S accuracy class as per category "C" of IS:15959/2011
Estimated Cost (In Lakhs)	199.92
Basis of prices	Firm Price Basis
Tender Validity	120
Delivery Requirement (In Months)	4
Tender on rate contract basis	NO
Tender Fee (In INR)	5000
GST In INR (@18% on Tender Fee: SAC	900
Total Tender Fee Amount including GST in INR.	5900
Contact	Mr Manoj Dhabarde , 8879413602 ,cemmcmsedcl@gmail.com
Pre-Qualifying Req	As per QR Clause of Tender
Budget Type	Capex
Scheme Code	Capex
Scheme Name	Capex
Department	Material Management Cell
Office Type	HO
Location Type	Corporate Office
Designation	Executive Engineer(Distribution)
Pre-Bid Meeting Address	Office of the Chief Engineer, Maharashtra State Electricity Distribution Co. Ltd. Material Management Department, Plot No. G-9, “Prakashgad” First floor, Prof. A.K. Marg, Bandra (E), Mumbai – 400 051.
Bid Opening Address	Office of the Chief Engineer, Maharashtra State Electricity Distribution Co. Ltd. Material Management Department, Plot No. G-9, “Prakashgad” First floor, Prof. A.K. Marg, Bandra (E), Mumbai – 400 051.
Version No	1
Call for Deviation	YES
Is Annexure C1 Applicable	YES
Is Manufacturer Applicable	YES
Is Trader Applicable	NO

Minimum % of Offered Quantity	20
Is Power Supplier Applicable	NO
Tender Sale Start Date	01-03-2021 20:00
Tender Sale End Date	22-03-2021 12:00
Bid Start Date	01-03-2021 20:30
Bid End Date	22-03-2021 15:00
Pre-Bid Meeting Date	09-03-2021 12:00
Techno-Commercial Bid opening on	22-03-2021 15:30
Price Bid opening on	Will be declared later
Annexure C1 Opening Date	Will be declared later
Winner Selection Date	Will be declared later

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MATERIAL MANAGEMENT DEPARTMENT
MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO. LTD.
Tender No. MMD/T-NSC-02/0321

BID NOTICE

The Chief Engineer, Material Management Department (MMD), on behalf of Maharashtra State Electricity Distribution Company Limited (the Purchaser), hereby invites sealed bids from eligible bidders for procurement of Three phase four wire CT/ PT operated 1 Amp & 5 Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.2S & 0.5S accuracy class as per category "C" of IS:15959/2011. Entire bidding document is available online on https://etender.mahadiscom.in/eatApp/ as per date indicated below. Any changes in the Bid Schedule, corrigendum etc. shall also be notified via MSEDCL's website. Prospective bidders are therefore requested to regularly check the website for any updates.

Tender No. MMD/T-NSC-02/0321

Estimated Tender Cost: Rs. 1.99 Crores

Tender Fee: Rs. 5,000.00 + 18% GST

The bidder should submit non-refundable Bid Fee of Rs. 5,000.00 + 18% GST paid through online payment only, prior to the dead line for submission of bids as per the procedure led by the MSEDCL.

Earnest Money Deposit: The bid must be accompanied with EMD @ 0.50% (Half Percent) value of the offered quantity of the tender in the form of BG as per the Annexure–M enclosed with tender documents having validity of 120 days from opening of tender. Interest shall not be allowed on EMD.

The scanned copy of the online payment receipt / Demand Drafts / BG should be uploaded (in e-tendering) and the Demand Drafts should be submitted to this office on or before submission date and time.

Calendar of Events Event	Date and Time
Begin Sale of Bid Document	01.03.2021
Date and time of submission of Bids	22.03.2021 at 15:00 hrs.
Date and time of Bid Opening	22.03.2021 at 15:30 hrs.

THE CHIEF ENGINEER
Maharashtra State Electricity Distribution Co. Ltd.
Material Management Department,
Plot No. G-9, "Prakashgad" First floor, Prof. A.K. Marg,
Bandra (E), Mumbai – 400 051.
E-mail- cemmcmsedcl@mahadiscom.in

MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO. LTD.

TENDER FOR

Procurement of Three Phase Four wire CT/ PT operated 1Amp & 5Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.2S & 0.5S accuracy class as per category "C" of IS:15959/2011

Tender No: **MMD/T-NSC-02/0321**

OFFICE OF THE CHIEF ENGINEER,
Maharashtra State Electricity Distribution Co. Ltd.
Material Management Department,
Plot No. G-9, "Prakashgad" First floor, Prof. A.K. Marg,
Bandra (E), Mumbai – 400 051.
E-mail- cemmcmsedcl@mahadiscom.in
cemmcmsedcl@gmail.com

INDEX

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SECTION-I

INVITATION TO TENDER AND INSTRUCTION TO BIDDERS

TENDER FORM (NOT TRANSFERABLE)

(TO BE SUBMITTED ONLINE DULY FILLED IN AND DIGITALLY SIGNED)

To be submitted online not later than the date mentioned in the tender details. For participating in tender opening, the bidder can login at the specified time and date of opening of the tender, if he desires so.

The bidder is requested to quote his lowest rates F.O.R. destination for the supply of materials. The material is required at various places in the State of Maharashtra. The tender documents duly filled-in and digitally signed, are to be submitted online before due time & date of the submission of tender in prescribed form.

The modifications made to the terms & conditions shall applicable to this tender only.

FOR CHIEF ENGINEER (M.M.DEPARTMENT)

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INSTRUCTIONS TO THE BIDDERS

I SCOPE OF WORK:

The scope of work under this tender is for design, engineering (wherever applicable), manufacture, inspection & testing before dispatch, packing and supply of Three phase four wire CT/ PT operated 1 Amp & 5 Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.2S & 0.5S accuracy class as per category "C" of IS:15959/2011 as specified in Annexure-D / Technical Specifications, at various destination sites / stores Centres of the Purchaser in Maharashtra. The quantity for procurement is as below.

Sr. No.	Item Description of HT TOD Meter	Quantity to be procured in Nos.
1	0.5s, 5A	2,227
2	0.5s, 1A	22
3	0.2s, 5A	1,778
4	0.2s, 1A	276
Total		**4,303**

The Actual Quantity of meters that will be procured may vary depending upon the site requirement. The Quantity mentioned as above against various capacities can undergo change. However, the Minimum Assured Quantity for procurement shall be 50% of the total tendered quantity as mentioned above.

The list of various destination sites / stores Centres of the Purchaser is enclosed as Annexure K.

II QUALIFYING REQUIREMENTS :

1. The offers of only original manufacturers of L.T.A.C. Static Energy Meters shall be accepted against the Tender.
2. The following requirement shall be fulfilled by the bidders/manufacturers
   a) The turnover in any one of the last three financial years shall be 60% of estimated cost of the tender or Rs. 100 Cr. whichever is higher. For evaluation of offers the turnover during any consecutive three of following F.Y. may be considered :
      2016-17, 2017-18, 2018-19, 2019-20
   b) The bidder/manufacturer shall have supplied minimum 12.5 Lakhs static meters during the last three financial years.
   c) The bidder/manufacturer shall have minimum experience of three years of supply or manufacturing for static energy meters upto the end of the last financial year.
3. The offers of Indian subsidiary company, whose parent company is located abroad fulfilling the qualifying requirements, shall be considered provided the Indian participant subsidiary company fulfils the minimum experience of three years of supply or manufacturing of static energy meters up to the end of the last financial year. Further, the conditions of turnover (i.e. Rs. 100.00 Crores or 60% of estimated cost of tender whichever is higher) during any one of the last three financial years and supply of minimum quantity of 12.50 Lakhs static energy meter during last three financial years can be fulfilled by the parent company located in abroad on behalf of their Indian subsidiary company. The parent company shall furnish undertaking for

accepting responsibility for supplying quality meter as per specifications and execution of the contract on behalf of its India based subsidiary unit who has participated in the tender in Annexure F-1.

4. In case of offers of Foreign bidders / manufacturers, they shall fulfill Qualifying Requirement as per Sr. No. II [1] and II [2] above.
5. The offer from any one of Indian manufacturing companies which are sister companies of the same group and with the same management having majority of common Directors and shareholders shall be considered provided they are jointly fulfilling the Qualifying Requirements as per Sr. No.II [1] and II [2] above.
6. Bidder must possess the following certifications at the time of submission of the bid.
   a) The meter shall bear ISI mark
   b) ISO 9000.
   c) ISO 14000.
7. The participating firm have to submit valid NABL accreditation Certification that they have in house National Accreditation Board for Testing and Calibration Laboratories (NABL) Lab for testing of Energy Meters.
8. The participating firms have to submit Capability Maturity Model Integration (CMMI Level – III) certificate along with offer.
9. The participating firms have to submit R & D certification from Department of Science and Industrial Research (DSIR) along with offer. However, those firms which are not having R & D certification but have applied for R&D Certification to Department of Science and Industrial Research (DSIR), they shall submit this certificate before opening of Commercial Bid (Price Bid) of subject tender. Non submission of DSIR Certification before opening of Commercial Bid (Price Bid) from bidders, their offer shall not be considered for further evaluation.
10. Following Documents should be submitted by the bidder along with the bid.
    - BIS License certification.
    - The quantity offered for the supply of HT TOD Meters in the prescribed format as per schedule 'C'.
    - Documentary evidence showing annual turnover of last 3 years, certified by Chartered Accountant for preceding three financial years.
    - Copies of orders executed by the bidder, and the Certificate from the purchaser with regards to successful execution of the order for preceding three financial years.
    - List of orders in hand.
    - Documentary evidence (for e.g. SSI/NSIC Certificate) for manufacturing capacity to cover the quantity offered by the bidder and considering orders in hand.
    - List of in house manufacturing and testing facilities as well as quality control set up.

- Certificate from Charted Accountant for not having controlling stake in more than one entity as per clause no VII.
- Type test certificates from NABL accredited lab such as CPRI/ERDA valid for a period of five years.
- The bidder has to submit Undertaking cum Indemnity Bond as per Annexure-G.

FOR FOREIGN BIDDERS / MANUFACTURERS :

In case of foreign bidders/manufacturers, they shall fulfill Qualifying Criteria as per Clause II[1] and II[2] of technical specification.

III PRICES :

(i) Prices are acceptable only on F.O.R. destination basis inclusive of Goods and Service Tax (GST for brevity) i.e. Integrated GST (IGST) for outside State / Central GST+ State GST (CGST+SGST) for within State, risk in transit, freight showing the break-up as desired in the Annexure 'B'. It shall be noted that quotations not conforming to F.O.R. destination basis inclusive of IGST/(CGST+SGST) etc. and to the unit as specified in Annexure 'B', shall be rejected even though the bidder's offer may be lowest. The bidder shall quote Ex-Works Price and element of freight and insurance along with applicable rate of IGST/(CGST+SGST). The F.O.R. destination price i.e. up to site or the Store Centre of the purchaser as the case may be inclusive of IGST/(CGST+SGST), risk in transit and freight will be programmatically calculated. While raising the invoices, however, IGST/(CGST+SGST) should be shown separately in the invoice raised.

(ii) For each of the items quoted, bidder shall specify offered quantity. However, the offered quantity shall not be less than 20% of the advertised quantity (Advertised quantity means the quantity required as indicated in Annexure 'B' / Price Bid) so as to deliver the said quantity within the delivery requirement of the Purchaser as indicated in the tender documents.

IV TAXES:

(i) The Purchaser shall be registered under Goods and Service Tax Act and should comply with all the statutory compliance requirements of GST Law diligently.

(ii) It is imperative for the bidder to indicate the amount of IGST/(CGST+SGST) included in their price while giving the break-up of F.O.R. destination price in Annexure 'B', failing which, the offer will be treated as ambiguous and will be rejected as per the provisions of clause X of tender form.

(iii) After awarding the contract, the supplier shall not charge any additional amount towards GST; during the currency of contract except statutory variation by Central / State Government in normal (full) rate of integrated GST. In case the GST is decreased than the rate indicated in the price bid, the benefits of the reduction in the GST shall be passed on to the purchaser. The increase in the GST rate due to increase in turnover during the contractual delivery period shall not be charged to the purchaser.

(iv) Necessary documentary evidence for the GST claimed shall be submitted along with the bills.

V BASIS OF PRICES:

The bidder shall quote the prices on firm price basis, as has been specifically brought out in the Tender Details. For any deviation in this regard, the offer shall be summarily rejected.

VI SAMPLE SUBMISSION:

For testing of tender sample meters at any one NABL Lab., IT Section of MSEDCL and Testing Division MSEDCL, tenderer are required to submit 5 (Five) nos. of sample meters out of which one is without ultrasonic welding and 1 (One) no. of sample HHU of each offered type mentioned in table below as per technical specifications in the office of the Chief Engineer, MSEDCL, Material Management Dept., 1st Floor, Prakashgad, Bandra (E), Mumbai – 400 051 on or before the time & date stipulated for submission of offer:

HT TOD Meter 0.2S class of accuracy	HT TOD Meter 0.5S class of accuracy
1 (one) No. of sample HHU	1 (one) No. of sample HHU
5 Nos. of Sample Meters including 1 Nos. meters without ultrasonic welding of offered type / item.	5 Nos. of Sample Meters including 1 Nos. meters without ultrasonic welding of offered type / item.

The Cl. No.26 of technical specification stands modified to this extent and other stipulations of Cl. No.26 of technical specification will remain unchanged.

Packing of tender samples:

"Sample meters shall be suitably packed in order to avoid damage during transit or handling. In case, the sample meters found damaged, it shall be the bidder's sole responsibility. Therefore, bidders should ensure that the meters packed are intact."

VII DELIVERY:

(i) The scheduled delivery period is 4 months from the letter of award.

(ii) Bidder is requested to quote delivery F.O.R. DESTINATION only & only in the unit of the item specified in Annexure 'B' i.e. if the quantity is in sets or in tones or in numbers or in kilometers or in coils, the rate of delivery shall only be in the same unit.

(iii) It is mandatory on the part of the tenderer to quote the delivery on monthly basis. If the offered delivery is indicated on quarterly basis, then the delivery would be counted proportionately in three equal installments per month for liabilities of the contract including payment of price variation and levy of liquidated damages.

(iv) Bidder is requested to quote minimum 10% of offered quantity (first lot) to supply within 2 months of commencement period from date of order & balance quantity in equated monthly lots within delivery schedule.

(v) The delivery schedule for balance ordered quantity (except commencement period of first lot) will be spread over the delivery period of tender in proportion to the quantities quoted by the firms.

(vi) Size mix for the purpose of delivery, when delivery is quoted in assorted items, shall be determined by the Purchaser while issuing the A/T or dispatch instructions and will be binding on the bidder. The Purchaser will also have the liberty of modifying the size mix for the purpose of delivery, even after the A/T is issued.

(vii) MSEDCL may issue dispatch instructions as per requirement. The quantity demanded per consignee could be less than or equal to monthly lot specified in contract. Wherever as per demands, the quantity to be supplied to a consignee in a particular month is less than monthly lot quantity; the said quantity will be treated as lot quantity for the purpose of delivery and payment.

(viii) MSEDCL may instruct the supplier to withhold entire or part of monthly supply of material for a specified period by giving two months advance instruction.

(ix) Time being the essence of contract, the supplier shall strictly maintain monthly delivery schedule.

(x) The bidder is advised to get their type tests & drawing approval immediately after placement of LoA so that the material is received by the purchaser well within the committed delivery period. If there is any delay in delivery of material as per schedule, the undelivered quantity as per schedule can be diverted to other good performing bidder.

(xi) **POOR PERFORMANCE:**

If the participating firm/ supplier delays the supply beyond 3 (three) months of their schedule for immediate earlier two consecutive orders for the similar item then, although the liquidated damages for delayed supply are applicable as per tender condition, the firm may not be considered for placement of order against the subject tender.

(xii) <u>For HT TOD meter tender, performance in delivery of earlier HT TOD meter orders will be consider.</u>

VIII OFFERING THE MATERIAL:

(A) The bidder may offer the material as per MSEDCL standard technical specifications as per Annexure-D. In case the material is being offered as per MSEDCL Standard Technical Specifications, the bidder does not have to fill the entire guaranteed technical particular (GTP). The bidder shall only submit the consent in this regard as given in Annexure-E and submit the type test reports & drawings for approval of MSEDCL. However; the bidders, who do not want to offer the material as per MSEDCL Standard Technical Specifications and have deviations in lieu of Indian Standards, will have to fill the entire GTP.

(B) The person / entity should not have controlling stake in more than one entity applied for the tender / bid. **Necessary certificate duly certified by Chartered Accountant to this effect shall be submitted along with the tender documents**.

(C) Factory address, from which the bidder intends to supply the material against the tender, shall be as indicated in the latest approved on line vendor registration form on e-tendering through which the vendor is submitting the offer.

(D) The bidder shall offer the rates, taxes as applicable for the factory location indicated in his latest approved on line vendor registration form on e-tendering through which he is submitting his offer.

(E) If the bidder intends to supply the materials from approved multiple factory locations in addition to the factory from which the bidder has submitted the offer; the bidder has to indicate the location and quantity offered from each location in the format "A"
The F.O.R.D. rate shall remain same for all the multiple locations. The bidder shall indemnify MSEDCL for any consequences arising due to supply from approved multiple locations.

Sr. No.	Name of approved factory location	Address of factory location	Quantity offered
(1)			
(2)			
Further, I/we ….. hereby indemnify MSEDCL for any consequences arising due to supply of offered material from approved multiple locations. Seal & signature of bidder			

IX CONFLICT OF INTEREST

A bidder may be considered to have a conflict of interest with one or more parties in a bidding process if they:

(a) Have controlling shareholders in common; or

(b) Receive or have received any direct or indirect subsidy from any of them; or

(c) Have the same legal representative for purposes of a bid; or

(d) Have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on a bid of another bidder, or influence the decisions of the purchaser regarding the bidding process.

Bidders found to be in conflict of interest, shall be disqualified.

X QUOTATION:

(i) Bidder shall quote his rate per unit specified in Annexure 'B' / Price Bid in figures.

(ii) Bidder's printed terms and conditions will not be considered as forming part of the tender.

XI AMBIGUITY IN QUOTATION:

The bidder is requested to please make a note that in case of ambiguous terms in respect of offered quantity in Annexure- B and schedule 'C', F.O.R. condition, GST, basis of price (i.e. firm / variable) or if the blanks are left out in the offer, the item / tender shall be rejected.

XII FILLING IN OF ANNEXURE:

The bidder is requested to ensure that the comments against each and every item / clause of Annexure shall be clearly filled in and answered. Any item/clause shall not be left blank or unanswered. If any item /clause is not applicable, the "Not Applicable (N.A.)" checkbox shall be selected.

XIII ADDITIONS/ALTERATIONS PROHIBITED:

The bidder shall not make any additions, alterations or changes in the Tender Form and the Conditions of Tender & Supply (Annexure 'A') including the description of material mentioned in Annexure 'B'. They should quote rate for the material described or click the checkbox 'Not quoted' against each of the item in Annexure 'B' / Price Bid.

XIV B.I.S. LICENCE CERTIFICATE :

A scanned copy of valid BIS License (full Copy) certifications for offered items ratings duly sealed & signed must be uploaded and submitted along with offer, failing which, the offer shall be rejected.

In case the validity of the BIS license is expiring before date of submission of tender, necessary documentary proof of having applied for renewal of validity of the BIS license must be uploaded while submitting the bid. The renewed copy of the BIS License shall be submitted before commencement of supply.

However, valid BIS license scan copy of offered material must be submitted by the qualifying bidders before commencement of supply, failing which their order will be cancelled with financial liability on supplier.

XV MANDATORY REQUIREMENT OF SUBMISSION OF OFFER:

The offer shall be submitted online duly filled in; attaching all the required documents, completed in all respects and should be digitally signed.

XVI SUBMISSION OF DRAWING & BILL OF MATERIAL: (wherever applicable)

The bidder shall submit the drawings and bill of material conforming to the tender specification wherever applicable. In such cases, the offer without the drawings and bill of material shall not be evaluated and considered. The drawings and bill of material submitted along with the bid shall not be considered for evaluation of the offer but the drawings and bill of material of the successful bidder shall be scrutinized when the Purchaser decides to accept such bid. It may, however, be noted that Purchaser's action of evaluation of the tendered bid would not mean approval of the drawings and bill of material submitted along with the tender bid.

The bidder shall depute his authorized representative for discussion on the drawings, either immediately on hearing from the Purchaser or after receipt of Letter of Award. The formalities like submission of drawings, bill of material etc. and getting the same

approved by the Purchaser shall be completed by the successful bidder within TEN DAYS from the date of Letter of Award of the contract. The approval to drawings complete in all respects mentioned in technical specifications (Annexure-D) will be accorded within SEVEN working days thereafter. Any delay in this regard shall lead to cancellation of the Letter of Award at the risk and cost of the bidder. The supplies against the contract shall conform to the approved detailed drawings / bill of material and the detailed technical specifications.

XVII NAME OF AUTHORIZED REPRESENTATIVE:

The digital certificate shall be in the name of person authorized by the firm. In case, the digital certificate is compromised or the person holding the digital certificate is no longer authorized to digitally sign the tender, it is the responsibility of the bidder to revoke this certificate and obtain the fresh certificate. While submitting the bids online only valid digital certificate shall be used. The vendors are requested to check the validity of digital signature and prior to the expiry date & they are requested to get their Digital signature key validated before expiry of the same. MSEDCL shall not be responsible for Non-submission of any of the Bids (Techno Commercial Bid, Deviation Bid, Price Bid, Annexure - C-1) by vendors due to expired/Invalid Digital signature.

The bidder is responsible for all the contractual liabilities and responsibilities thereof.

In case the bidder authorizes the representative to deal on behalf of the bidder, the name and address of such person should be informed to the purchaser. The bidder shall submit the power of Attorney in favour of representative duly executed before the Notary. In the absence of the Power of Attorney, the purchaser shall not deal with the representative.

XVIII -(A) OFFER OF MICRO & SMALL ENTERPRISES AND OTHER UNITS:

The bidder registered with Directorate of Industries of Government of Maharashtra for manufacturing the items tendered / offered and those who have attached valid certificate at the time of vendor registration shall be considered for concessions applicable and procurement of reserved items as per GoM G.R. dtd. 30-10-2015 amended up to date. These benefits shall be available only to those items approved during the registration process and subsequent updates in registration up to the submission of this tender.

Based on concession of Central Government's Micro & Small Enterprises office order dtd. 23-03-2012, 241 items are being kept reserved. As per above reservation of items 100% reserved items to be purchased from Micro & Small Enterprises out of which 20% reserved items to be purchased from S.C./S.T. enterprises. Reservation is applicable for a limited period unless & until re- examined. If Micro & Small Enterprises participated in the tender and the tendered item is not reserved, then 20 % order with L-1 rate to be given to Micro & Small Enterprises and out of this 20%, 4% to be given to S.C./S.T. enterprises.

If there are any specific Government Directives such as reservation of items for units in Maharashtra, non-eligibility of preference to SSI units etc. for particular items, price and purchase preference etc. the same would be applicable irrespective of the fact that it has not been specifically incorporated in the tender notice and/or tender documents.

(B) PREFERENCE TO INDUSTRIAL UNITS LOCATED IN MAHARASHTRA AND OFFERS BY MATCHING RATES WITH LOWEST ACCEPTABLE BIDDER

The lowest acceptable rate will be the unit rate worked out without considering IGST/(CGST+SGST) as applicable and the same rate will be considered as applicable to the respective bidder who has agreed to accept order at lowest acceptable rate.

1) If the lowest acceptable rate received against the tender is from a bidder outside Maharashtra, then they shall be considered for order up to 50% of Purchaser's requirement and if industrial units located in Maharashtra are agreeable to accept order at such lowest acceptable rate, such industrial unit in Maharashtra shall be considered for order up to 50% of Purchaser's requirement by matching their rates with lowest acceptable unit rates exclusive of IGST/(CGST+SGST).

   However, if industrial units located in Maharashtra are not agree to accept order at such lowest acceptable rate, then full supply order shall be placed on bidders outside Maharashtra. The Purchaser reserves the right to distribute the quantity among Bidders after matching their rates with the rate of lowest acceptable bidder. Further, it is to note if the bidder registered outside Maharashtra submitted offer and given address of Maharashtra will be considered as bidder from Maharashtra only if offered the rate with (CGST+SGST).

2) The bidders who are not eligible under the above clauses can also give their confirmation to accept order at the lowest acceptable rate received against the tender. They could be considered for this entitlement only after allocating quantities of Maharashtra State Industrial units as per the provisions stated at (1) above, in the order of merit as per price ranking for the balance quantity remained to be procured. The Maharashtra State Industrial units who are not eligible for the purchase preference as above could also be considered for this preference under this clause in the order of merit of their prices. Other bidders shall be considered for the order by matching their rates with the rate of lowest acceptable bidder after allocating reasonable quantities first to the industrial units of Maharashtra eligible under Clause 5(a) and 5(b) of Annexure 'C-1'.

   The lowest acceptable rate is known only on the date of decision by the Competent Authority, hence the lowest acceptable rates of the tender cannot be declared in advance, however lowest acceptable rate of the tender would be equal to or more than the lowest rate received in the tender.

   The confirmation for acceptance of the order at the lowest acceptable rate indicated as above shall be given in the format as per Annexure 'C-l' of the tender documents. The same should be submitted online on or before the due time and date of submission of Annexure 'C-1'. The confirmation shall be opened online on due time and date of opening of Annexure 'C-1'. Schedule for submission and opening of Annexure 'C-1' shall be communicated separately by e-mail and on the website. Though confirmation in Annexure `C-1' as above is called from all the qualified bidders, the bidders, who quoted rates within the range of 5% in comparison with the lowest acceptable rates, shall only be considered and their Annexure `C-1' will be opened on the date and time intimated subsequently in the

presence of bidders who chose to be present. Provided, however, that the Annexure `C-1' of the bidders, who have quoted above the range of 5% in comparison with the lowest acceptable rates, shall also be considered in case the aforesaid bidders within the range of 5% are unable to fulfill the quantity requirement. In that case also, the date of opening of Annexure `C-1' will be intimated to the bidders

In the above confirmation, if the bidder indicates any rate, then the confirmation given by the bidder will not be considered as valid.

Above confirmation for the quantity less than as indicated in Clause X (iii) of Instructions to the bidder shall not be acceptable.

The prices indicated in the original offer shall not be considered as valid once offer for acceptance of order by matching rates is given. In the event of withdrawal of offer by matching rates within the validity period, the entire offer against the tender shall become invalid and shall be summarily rejected and the earnest money paid by the bidder shall be forfeited.

The lowest acceptable tenderer would be considered for awarding order for quantity subject to his capacity and capability as under.

Trial Order: Minimum 10% but limited up to 20% of tendered quantity.

Regular Order: Minimum 40% of tendered quantity.

Any balance quantity remained after allocation as mentioned above, will be allocated amongst the one or more bidders who have matched with Lowest Acceptable Tenderer, subject to their capacities and restricted to maximum 3 bidders over L-1.

Wherein

Trial order means the firm who have not supplied tender item to any Government / Semi-Government Electricity Dist. Utility / SEB or MSEDCL during preceding five years. &

Regular order: The firm who have supplied minimum two orders of static meters (Single Phase or Three Phase) to any Government / Semi-Government electricity Dist. Utility / SEBs or MSEDCL during preceding five years during preceding five years.

If matching rate offer is not available, 100% quantity will be allotted to L-1 bidder subject to capacity & capability to supply total quantity.

However, if the above conditions are not getting fulfilled in tender, then quantity allocation will be at the sole discretion of MSEDCL.

XIX EARNEST MONEY DEPOSIT (EMD):

The bidder should pay the Earnest Money @ 0.50% (Half Percent) value of the offered quantity of Tender in the form of BG as per the Annexure–M enclosed with tender documents having validity of 120 days from opening of tender. Interest shall not be allowed on EMD. EMD shall be forfeited (i) in case the bidder withdraws the tender / offer

during the validity period (ii) in case the bidder fails to pay the performance deposit if the contract is awarded.

However, bidders from the following categories are exempted from payment of earnest money deposit.

1) All Government and semi Government institutions under Govt. of Maharashtra and Zilla Parishad in Maharashtra and fully owned undertaking of any State Govt. and Govt. of India only for the items manufactured by such institutions.
2) Micro and Small Enterprises registered under Micro, Small and Medium Enterprises Development Act-2006 only for the items mentioned in their permanent registration certificate at the time of vendor registration.
3) The bidder registered with N.S.I.C. and those who have attached valid N.S.I.C. Registration Certificate for the items mentioned in their permanent registration certificate at the time of vendor registration.

The benefits mentioned in (1) to (3) above shall be available only to those items approved during the registration process and subsequent updates in registration up to the date of submission of this tender.

Exempted bidders should upload a latest valid certificate issued by any approved body of 'Ministry of Small & Medium Enterprises' (MSME) such as 'National Small Industries Corporation' (NSIC) or 'District Industries Centre' (DIC) for EMD exemption.

XX SIGNING OF THE TENDER DOCUMENTS:

Offer shall be submitted along with the tender documents and duly filled in with all Sections / Annexures / Appendixes / Schedules etc. The offer shall be signed with valid digital signature.

XXI SUBMISSION / SUPERSCRIBING OF THE TENDER DOCUMENTS:

The offer is to be submitted as follows.

(a) **Online Submission:**

(i) Techno-Commercial Bid (Part-I): This part shall contain all technical and commercial aspects of the bid and documents supporting the same except the Price Bid.

The bidder is requested to please make a note that in case of the Price Bid (Part-II) is submitted instead of Techno-Commercial Bid in Part-I or submitted Price Bid (Part-II) along with Techno-Commercial Bid in Part-I, the offer shall be rejected.

(ii) Price Bid (Part-II)

This part shall contain only the Price Bid strictly in the prescribed format, i.e. Annexure 'B'.

(b) Offline Submission:

Physical submission of documents (Part-III)

Envelope for this part shall contain documents like Type Test Reports, Drawings, Bill of Material, Catalogues etc. wherever applicable as per technical specification and they shall be scanned and these scanned documents to be taken into PDF format on CD media (2 sets) and are to be submitted to EE (NSC) in the office of Chief Engineer, Material Management Dept. in sealed envelope on or before due date & time of submission.

METHOD OF SUBMISSION OF PART-III AND THEIR OPENING:

This envelope shall be individually sealed and shall be super scribed with the name and address of bidders and the following information before posting or delivering the same:

i. Tender No.

ii. Due date and time of submission.

iii. Due date and time of opening.

Envelope as above shall be submitted on or before the prescribed due date and time of submission and shall be opened on due date and time of opening as prescribed.

In case of bidders whose techno-commercial bid is acceptable, their Price Bids will be opened at a later date. This date shall be intimated to such bidders separately.

XXII TIMELY SUBMISSION OF OFFER:

(a) The bid is to be submitted online on or before due date and time of submission to the Purchaser at website.

(b) It is advisable to submit the digitally signed offer sufficiently in advance of due date and time so as to avoid last minute congestion of network / server.

(c) Offer received after the due date and time of submission shall not be accepted.

(d) In case, the due date of opening of tender happens to be holiday, the offer shall be opened on the next working day at the same time.

XXIII PURCHASERS RIGHT:

The Purchaser reserves the right to reject any offer without assigning any reason whatsoever.

XXIV DISREGARD OF TENDER CONDITIONS:

Tender containing any deviations / additions / alterations /changes in the conditions of the tender and supply as stated in Annexure 'A', 'B', 'C-l', 'D', 'E', 'F', 'G' and schedule 'C' shall not be acceptable.

The bidder having digitally signed all the tender documents indicates any deviations / additions / alterations / changes in the covering letter, unrelated annexures and schedules of the offer or elsewhere, the same shall be ignored and the offer shall be treated as meeting with all specified tender conditions.

XXV PROHIBITION FOR POST TENDER CORRESPONDENCE:

The Bidder should note that no correspondence shall be entertained or considered after the due date and time of submission of tender unless otherwise sought by the Purchaser.

XXVI RIGHT TO ORDER OUT QUANTITY IN VARIANCE TO OFFERED QUANTITY:

The Purchaser reserves the right to order out / procure any quantity in excess of the offered quantity with mutual consent. The quantity specified may be for dispatch to one destination or several places.

XXVII ACCEPTANCE OF TENDER:

The Purchaser does not bind itself to accept the lowest or any tender; neither will any reasons be assigned for the rejection of any tender or part of tender. It is also not binding on the Purchaser to disclose any analysis report on tender/samples. The bidder on his part binds himself to supply any item or items selected from his offer in part or whole at the option of the Purchaser.

XXVIII NOTIFICATION OF AWARD:

Notification of Award of contract will be made by a letter of Award, to be sent by registered post or given by hand, to the successful bidder by the Purchaser. It could also be made by e-mail or by Fax to be confirmed in writing by registered post to the successful bidder by the Purchaser.

Acceptance of the same to be conveyed within 3 working days by the supplier.

XXIX REFUND OF EARNEST MONEY DEPOSIT OF UNSUCCESSFUL / SUCCESSFUL BIDDER:

Earnest money deposit shall be returned to the unsuccessful bidder by RTGS within 7 (seven) working days after the tender has been decided and on submission of receipt of E.M.D. payment to the G.M. (F&A-SB), MSEDCL, Prakashgad, Prof. A.K. Marg, Bandra (East), Mumbai -400051. Earnest money deposit in the form of BG will be returned to the unsuccessful bidder within 7 (seven) working days by Chief Engineer, Material management Dept. after the tender has been decided. Further, the Earnest money deposit shall be returned to the successful bidder after submission of acceptance letter regarding 2.5% of Contract Performance Deposit in terms of A/T.

XXX VALIDITY OF OFFERS:

The bidder shall keep the offer valid for acceptance up to and including last date of calendar month, covering the date of completion of 120 days (one hundred and Twenty days) from the date of opening of the tender and shall also agree to extend the period of validity required by the Purchaser. The bidder shall not be allowed to modify or change the conditions of the tender while extending the period of validity.

XXXI DECLARATION FROM BIDDER:

In order to ensure participation of reliable and honest bidders / contractors / vendors, etc. the bidder shall submit the declaration along with the bid in Annexure-I

XXXII CORRUPT OR FRAUDULENT PRACTICES:

The Maharashtra State Electricity Distribution Company Ltd. and the State require that bidders / suppliers / contractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, MSEDCL:

(a) defines for the purposes of this provision, the terms set forth below as follows:

(i) "corrupt practice" means behaviour on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them, or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; and

(ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.

(b) will reject a proposal for award if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded an MSEDCL contract if at any time it determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, an MSEDCL contract.

XXXIII INFLUENCE:

Any efforts by the bidders to influence the owner during evaluation process before order placement will be rejected. Similarly deviation in the term of payments, penalty, performance deposit, delivery period will be treated as non-responsive quotation / offer and will not be considered for evaluation /order placement.

Bidder shall submit the undertaking certifying that they have not approached any one for undue influence.

XXXIV TENDER FEES EXEMPTION:

Tender fee to be paid at the time of uploading / online submission of the tender. Bidders from the following categories are exempted from payment of Tender fees:

1) All Government and semi Government institutions under Govt. of Maharashtra and Zilla Parishad in Maharashtra and fully owned undertaking of any State Govt. and Govt. of India only for the items manufactured by such institutions.

2) Micro and Small Enterprises registered under Micro, Small and Medium Enterprises Development Act-2006 only for the items mentioned in their permanent registration certificate at the time of vendor registration.

3) The bidder registered with N.S.I.C. and those who have attached valid N.S.I.C. Registration Certificate at the time of vendor registration.

The benefits mentioned in (1) to (3) above shall be available only to those items approved during the registration process and subsequent updates in registration up to the date of submission of this tender.

The tender fee paid against the particular tender shall not be refunded / transferred /adjusted at all.

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XXXV PRE-BID MEETING:

1) The bidder or its official representative is invited to attend pre-bid meeting(s) which will take place at the place, date and time designated in the Bidding Data.

2) The purpose of the pre-bid meeting(s) will be to present the salient features of the bidding documents to the bidders, including the bid submittal requirements, the Conditions of Contract (including payment terms and conditions), the technical features of the project, and to clarify issues and to answer questions on any matter that may be raised by the bidders.

3) The bidder is advised to visit the Site and study the bid document thoroughly, and is requested to submit any questions in writing or by fax, to reach the Employer not later than one week before the pre-bid meeting.

A. Minutes of the meetings, including the text of the questions raised and the responses given will be transmitted without delay to all the prospective bidders through the website https://etender.mahadiscom.in/eatApp/. Any modification of the bidding documents listed which may become necessary as a result of the pre-bid meetings shall be made by the Purchaser exclusively through the issue of an Addendum pursuant to Clause and not through the minutes of the pre-bid meetings.

4) Nonattendance at the pre-bid meeting will not be a cause for disqualification of a bidder. Nevertheless, senior representatives of the bidders are strongly encouraged to participate in the pre-bid meeting to help ensure that they fully understand the key concerns of the Employer and the Employer's requirements.

XXXVI CLARIFICATION ON DEVIATIONS:

The purchaser, if necessary, shall obtain clarifications on deviations within 2 working days by requesting for such information from any or all the bidders in writing, as may be necessary.

The same should be submitted online on or before the due time and date of submission of Deviation Bid. The clarification shall be opened online on due time and date of opening of Deviation Bid.

The Schedule for submission and opening of Deviation Bid shall be communicated by auto generated e-mail of the e-tender website.

CERTIFICATE:

I/We agree to supply the materials at the rates herein tendered by me / us subject to the conditions of tender and supply in Annexure 'A' of this tender which I/We have carefully read and which I/we have thoroughly understood and to which I/we agree. I/we hereby agree to keep this offer open up to the date mentioned in tender details and shall be bound by communication of acceptance dispatched within the validity period.

Seal & Signature of bidder

(SECTION II)

ANNEXURE 'A'

CONDITIONS OF TENDER AND SUPPLY

1) EFFECT OF CONTRACT:

The contract shall be considered as having come in to force and shall be in operation for a period of 9 months from the date of Notification of Award. The bidder whose offer is accepted is hereinafter called "the supplier".

2) QUALITY OF SUPPLIES:

All materials supplied shall be strictly as per specification laid down by MSEDCL and in accordance with the approved standard Guaranteed Technical Particulars (GTP), drawings and type test reports.

3) ORDER QUANTITY, DELIVERY SCHEDULE AND QUALITY TESTING:

a. The L.O.A. will be issued for entire ordered quantity but this L.O.A. shall be treated as release order for first lot quantity offered by the bidders in delivery schedule.

b. The order for balance ordered quantity shall be released after receipt of satisfactory type test reports of samples drawn from first lot from independent laboratory.

c. In case of failure of the sample meters in type tests, then the balance ordered quantity shall stands cancelled.

d. The delivery schedule in the tender document shall be read as under:
"Commencement period of delivery of first lot shall be as quoted in the offer. However the delivery period for the balance ordered quantity shall commence within one month as per monthly delivery rate from the date of release order for balance ordered quantity."

4) MATERIAL AND COMPONENTS:

The other material and components not specifically stated in this specification but which are necessary for satisfactory operation of the equipment / items specified, shall be deemed to be included unless specifically excluded and shall be supplied without any extra cost.

5) A) ACCEPTANCE OF SUPPLIES / INSPECTION:

i) The supplier shall normally offer at a time, the entire quantity required to be delivered every month as per the delivery schedule indicated at Annexure 'B' of A/T for the purpose of inspection by the Purchaser.

Time being the essence of contract; the supplier shall strictly maintain the monthly delivery schedule.

ii) Materials shall be inspected by the Purchaser's Executive Engineer / or the representative authorized by the Purchaser before dispatch. An intimation in the prescribed Proforma about the date on which materials shall be ready for inspection, indicating quantity, shall have to be given to the Executive Engineer / or the representative authorized by the Purchaser before dispatch so as to reach him 10 working days in advance, failing which, the supplier shall be responsible for delay in delivery on account of inspection.

The intimation in the prescribed proforma (Inspection call) shall be forwarded on e-mail id cemmcmsedcl@mahadiscom.in & cemmcmsedcl@gmail.com. Inspection calls sent on any other e-mail id than specified above, shall not be entertained and the supplier shall be responsible for delay in delivery on account of inspection.

On receipt of such intimation, the materials shall be inspected within 10 working days. The materials shall be dispatched only after inspection and approval of same by the Inspector. The inspection approval letter shall be valid for a period of 30 days from the date of issue of letter to enable the supplier pack the material and arrange transportation thereof so that material should be reached at the respective consignee within scheduled delivery period.

After this period of 30 days, the validity of this inspection approval letter will lapse. If the material is not reached within scheduled delivery period to respective consignees, the approval of purchaser is to be sought by the supplier for revalidation of inspection approval letter at the sole discretion of MSEDCL.

For quantity supplied beyond contractual delivery period, negative price variation and statutory variations shall be applicable. However, the positive price variation and statutory variations for quantity supplied beyond contractual delivery period shall not be allowed unless the delayed delivery is attributed to MSEDCL.

iii) The supplier shall notify the names of the consignees as per DI, to whom the inspected lot would be dispatched. The supplier shall get the copies of inspection approval letter together with witness certificate duly signed by the concerned Inspecting Officer IN BLUE INK only and also mention reference or inspection approval letter on the challan / invoice, failing which any delay occurred in getting the S.R. Notes from the consignees would be solely to supplier's account. The inspection report shall be filled in online on the same day by the Inspector from the site on MSEDCL web portal after the inspection.

iv) Factory address, from which the bidder has to supply the material, shall be as indicated in the latest approved on line vendor registration form on e-tendering through which the bidder has submitted the offer.

v) The supplier shall offer inspection call intimation of readiness of material as per the monthly schedule only. In the event, during the inspection by the Purchaser's Inspecting Officer, if it is observed that the quantity actually offered for inspection is less than the quantity indicated for inspection in the inspection call, the Purchaser shall be entitled to recover from the supplier, the actual expenses incurred for arranging the inspection, and the supplier shall not dispute the amount to be recovered.

vi) The supplier shall submit the test certificates / reports from any NABL approved laboratory or the laboratory of his own for the respective quantity of material, before dispatch. The material shall not be dispatched unless and until the test certificates are approved by the Purchaser.

vii) All the necessary help shall be extended by the supplier to the authorized representative of the Purchaser to carry out testing of equipment / materials.

viii) MSEDCL may issue the dispatch instructions (DI) to deliver the ordered quantity to the bidders in Maharashtra within same districts of factory location of the supplier. However, it will not be binding on the MSEDCL; supplier has to deliver the material in other districts as per MSEDCL requirement. Further outside Maharashtra bidders have to deliver the material as per MSEDCL requirement to the designated consignee.

ix) MSEDCL on its sole discretion may get material inspected and tested by third party NABL lab.

B) RANDOM SAMPLE TESTING:

Random sample testing will be carried out as per technical specifications on supplied meters at any one store location and the result will be applicable for the entire Lot.

6) RIGHT TO CARRY OUT INSPECTION DURING MANUFACTURING:

The Purchaser at its option, will inspect the material ordered during its process of manufacturing including the inspection of raw materials and will request the supplier to carry out such tests as may be necessary to ensure proper quality of the material. The samples of components of the material shall be subject to quality check by the inspecting officer during manufacturing.

7) RIGHT TO REVISE DESPATCH INSTRUCTIONS, DELIVERY SCHEDULE AND TO DEFER SUPPLIES:

i) The Purchaser reserves its right to revise the dispatch instructions issued along with the order, at the time of giving final clearance for dispatch after inspection of the material. If such change in destination is not intimated at the time of inspection approval or waiver of inspection, The supplier shall dispatch the material as per the dispatch instruction in accordance with A/T. indicated by him in the inspection call letter.

ii) The Purchaser reserves its right to change the delivery schedule of the contract either by reducing the monthly lot up to 60% of the agreed lot or by increasing the same up to 120% of the agreed lot with prior two months' notice and the Purchaser shall not be liable to pay any compensation/damages on account of such change in delivery schedule.

iii) The Purchaser reserves its right to defer the balance supply to be received against the order by giving two months' notice for a maximum period of 6 months. In such an event, the delivery period for the deferred material shall be deemed to be extended proportionate to the period of deferment and the Purchaser shall not be liable to pay any compensation/ damages on account of such deferment of deliveries.

8) WAGON LOADS / TRUCK LOADS:

Quantity to be dispatched to consignee should be minimum in two full truck loads and may be part load as per the Purchaser's requirements may not necessarily be in full wagon load / truck load and may be part load as per the Purchaser's requirement.

9) ROAD TRANSPORT:

In case the supplier prefers to dispatch the materials by road transport at his risk and cost and without any extra cost to the Purchaser, the materials shall be accepted only during office

hours on working days. The supplier should ensure that the goods reach the stores in first half so as to arrange their unloading during office hours, failing which, the Purchaser shall not be liable for delay in unloading and for inconvenience caused to the transport contractor in the form of detention etc. Unloading at stores shall be arranged by the consignee.

10) DESPATCH INTIMATION:

The supplier shall inform by e-mail to the consignee details of dispatch along with e-way bill receipt in hard & soft format giving RR / LR No., Wagon / Truck No., Type of wagon, craneable consignment or otherwise, total value of consignment, etc. to facilitate the consignee to arrange for clearance of goods on cemmcmsedcl@mahadiscom.in or cemmcmsedcl@gmail.com.

11) BILL OF MATERIALS:

The supplier shall furnish bill of materials for each type of equipment / material offered which should be consistent with the drawing, specification and guaranteed technical particulars. The copies of the bill of materials should always be enclosed along with the bill submitted by the supplier for payment wherein he should specifically mention the materials / components dispatched out of the bill of materials, if the equipment is not sent in totality. Where the equipment / material to be supplied consist of more than one component, the supplier claiming payment for equipment / materials shall certify that all components of the equipment / material have been supplied in full for the quantity indicated in the invoice. Part payment shall not be allowed.

12) PACKING LIST:

Each package shall contain, in waterproof cover, the detailed list indicating the order reference, date, list of content and reference to the approved bill of materials. Each item contained in the package shall be described sufficiently to enable identification of the quantity, weight etc. There should not be any alteration in the packing list incorporated in the order, soft copy of the packing list should be sent to all the consignees and hard copy to G.M. (F&A-SB) should be enclosed with the bills along with other documents.

13) REPLACEMENT OF GOODS LOST, BROKEN OR DAMAGED:

Notwithstanding anything herein contained, the supplier undertakes to be responsible for the safe arrival of the materials in good condition and without any loss or damage at the final destination and until the same be actually delivered to and received by the Purchaser at its stores or other place of final destination and for this purpose, materials carried by railways or other carrier shall be deemed to be so carried at the risk of the supplier. In case of transit damage / shortages, the payment shall be made only for the quantity received in good and working condition and the consignee shall lodge claims with carriers and transfer the same to the supplier with all necessary documents for settlement of the same with carriers at the supplier's end. The transit damages / shortages / losses reported by the consignee shall be repaired / replaced by the supplier duly inspected, free of cost, within one month from the date of such intimation of breakages / shortages / losses without waiting for settlement of the claims from carrier or insurance co. etc.

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14) REPLACEMENT OF REJECTED MATERIALS:

If, on inspection at the final destination, the Purchaser discovers any loss in the materials supplied or that they are received in damaged condition or that in the opinion of the Purchaser, they are not of the contracted quality or specification, the Purchaser shall be entitled (notwithstanding that the property in the materials shall have passed on to the Purchaser) to refuse to accept or reject the materials altogether and claim damages or cancel the contract and buy its requirements from any of its suppliers stipulating earliest possible delivery and in accordance with its tender system against the supplier and recover the damages if any, from the supplier from any outstanding sums that may be due to the supplier from the Purchaser against this contract or against any of the contract entered into with the supplier, without prejudice to other rights and remedies available to it in law and reserving always to itself the right to forfeit the performance deposit placed by the supplier for the due fulfillment of the contract.

In case the stores / materials are found not in accordance with the prescribed specifications and / or the approved sample, the same will be rejected and the supplier shall replace the rejected stores / materials free of cost within one month from the date of intimation. The replacement of goods shall also have to be got inspected as per inspection clause. Further if the stores / equipment supplied becomes incomplete on account of either rejection or short supply of its components, the complete cost of the stores / equipment shall be recovered from supplier's bills without notice.

15) MATERIAL DESPATCHED AND PROGRAMME:

A statement as under indicating dispatches effected during every month shall be furnished to this office along with the programme of manufacturing / dispatches during the following two months. In the event of no dispatch, the statement shall contain nil information.

MONTHLY STATEMENT:

I. Name of Supplier:

II. Reporting Month:

Sr. No.	A/T No.	Material	Item No. as Per A/T	Consignee	RR/LR Delivery Challan No. With date	Date of Actual Receipt of Material	Qty. Dispatched Between 26th of Preceding month and 25th of the Reporting month	Programme of supply during the next 2 months
1	2	3	4	5	6	7	8	9

Consolidated details of the above information shall be furnished to office of the Chief Engineer (M.M. Dept.) after completing the supplies of a particular order. The copy of this consolidated information shall invariably be forwarded to the respective consignees, failing which; security deposit paid against the contract shall not be released.

16) MATERIAL RECEIPT & SUBMISSION OF BILLS AT CONSIGNEE:

On receipt of material at destination of consignee as per DI, Additional Executive Engineer (MM Dept.) of respective store should ensure the receipt of material in good & healthy condition. While receiving the material, store in charge should ensure the receipt of material as per Dispatch Instructions issued by MM Dept. Further, the store in charge should ensure the receipt of original & scan copies of following documents:

a) Tax invoice.

b) Detailed packing list.

c) Bill of Material.

d) Delivery challan.

e) E-way bill receipt.

f) Dispatch document (RR/LR).

On confirmation & validity of above documents, store in charge will generate Provisional SR Note through ERP system immediately for receipt of material at stores thereof.

Where required by the Purchaser, the successful bidder must send the operation and maintenance manuals, test certificates, drawings etc. for the material ordered. These should be sent immediately after dispatch of material and a statement to that effect should be made in the invoice.

After successful RST of supplied each lot, store in charge will generate final SR note through ERP system within 7 working days from receipt of material at stores.

17) PAYMENT OF BILLS:

(a) Terms of payment:

a. The Bidder shall be paid 100% payment within 60 days from the date of receipt of material in good condition, against Stores Receipt Notes (S.R. Notes) issued by the concerned consignee, against delivered quantity (truck load) of meters instead of lot wise quantity..

b. However, in respect of only those entities which qualify for 45 days payment period under the Micro, Small and Medium Enterprises Development Act, 2006, 100% payment of the Contract price will be paid within 45 days from the date of receipt of material at Consignee Store (truck load) in good condition, against Stores Receipt Notes (S.R. Notes) issued by the concerned consignee.

c. In respect of Micro, Small and Medium Enterprises, best efforts will be made for payment within 45 days from date of submission of invoice along with requisite documents after the delivery of entire lot. However, no claim for interest will be entertained in case of delay in payment beyond 45 days. The Micro, Small and Medium Enterprises who are ready to accept this payment term may only quote.

d. No dispute in this regard will be entertained. After completion of order, the claims of whatsoever nature lodged after 30 days from the last date of payment will not be entertained.

e. The payment shall be effected by A/C payee cheques / RTGS. Following documents as required in terms of order, will have to be forwarded to the G.M. (F&A-SB), Maharashtra State Electricity Distribution Co. Ltd., Prakashgad, Station Road, Bandra (East), Mumbai - 400 051 along with bills in triplicate to facilitate payment with a copy to the Chief Engineer of respective Zone.

(i) Invoice (on the basis of rates accepted as per A/T) issued in accordance with the provisions of GST Invoice Rules.

(ii) Supplementary Invoice / Bill for price variation claim if applicable with the relevant documents in support of P.V. claim.

(iii) Inspection and Test Certificate approval.

(iv) E Way Bill

(v) Copy of Acceptance letter of Permanent Bank Guarantee / Security Deposit Certificate.

(vi) Packing list.

(vii) Approved Bill of Material.

(viii) Certificate of having dispatched Operation & Maintenance Manual, copies of Test Certificates and approved drawings / Bill of Material to consignees wherever applicable.

The supplier shall forward the original R.R. / L.R. direct to the consignee along with relevant documents. The original bill shall be forwarded to The G.M. (F&A-SB), MSEDCL, Prakashgad, Bandra (E) and marked ORIGINAL. The bill should indicate the GST registration no. and date held by him under the GST Law. The Purchaser shall not be responsible for delay in payment of bills if the supplier fails to comply with any of the above requirements.

Supplier's copy of S.R. Note will be forwarded by the consignees through their respective Common Stores for supplier's record towards acknowledgement of receipt of material. Accounts copy of S.R. Note will be forwarded by the respective Common Stores to G.M. (F&A-SB) for payment.

Wherever the payment is to be effected against Material Receipt Intimation (MRI) and if the supplier fails to forward the documents such as inspection report, bill of materials, approved drawings, etc. wherever required along with the invoice to the respective consignees and no payment shall be made against the said MRI.

The whole of the first lot as well as monthly lot when delivered in installments, the date of delivery and due date of payment will be counted after the receipt of the entire lot.

Any amount more than Rs. One Lakh can be transferred to the bank Account of the supplier electronically. For this RTGS (Real Time Gross Settlement) provision, following information is to be furnished by the bidder in the required documents of the online offer.

1. Name of the Company
2. Name of the Bank & Branch with address where the amount is to be

transferred.

3. Current Account Number (15 digits)
4. RTGS No. / (IFSC Code) (Indian Financial Security Code)
5. MICR Code of the Bank
6. Company's email ID
7. Contact Name & Telephone No.

18) TAXES:

(A) Notwithstanding the fact that contract price is inclusive of GST:

(i) GST shall be paid at actual on the basis of due date of delivery or actual date of supply whichever is lower against documentary evidence.

(ii) Variation in GST on bought out items shall not be entertained.

(B) Structural changes in and due to 'Input Tax Credit' Scheme: -

(i) In the event of any structural change occurred in the Input Tax Credit Scheme after the date of submission of the tender till the currency of the contract, the benefit out of such change shall be passed on to the purchaser.

(ii) In the event of 'Input Tax Credit' being extended by the GST Law which were otherwise ineligible for claiming Input tax credit thereof, the seller should advise the purchaser about the additional benefits accrued or any variation thereof, through a letter containing such details and computation within such time as may be agreed between both the parties i.e. Supplier & MSEDCL.

19)DEDUCTION:

Any amount or amounts which become payable by the supplier to the purchaser under a particular contract, shall be deducted by the purchaser from any amount/amounts due or becoming due to the supplier under the same or any other contract and shall be adjusted against dues to the Purchaser.

20) GUARANTEE:

Material offered (Meter/Enclosure/) shall be guaranteed for a period of 66 months from the date of receipt at the consignee's Stores Centre or 60 months from the date of commissioning, whichever is earlier. In case of failure of material within the above guarantee period, tenderer shall make available other new conditioned / repaired material, free of cost at stores for replacement within 45 days from the date of intimation from stores and lift the failed material for repair rejected material after replacement. For this purpose, bidder shall maintain spare stock in adequate quantity of ordered ratings of material. If the defective material is not replaced / repaired within the specified period as above, the Maharashtra State Electricity Distribution Company Ltd. shall retain an equivalent end cost of material plus 15% supervision charges from any of the bills of the supplier or encashing available performance bank guarantee submitted against guarantee period or through any available sources, till the return of the equipment. No interest will be paid on the amount so retained/recovered. In case of material / item not returned duly repaired within 45 days, penalty shall be imposed @ 0.5% per week or part thereof

maximum up to 10% of the cost of undelivered material / equipment beyond specified time limit. In case of material / item not returned duly repaired within 5 months, total cost of the material / item along with penalty will be adjusted / recovered from the pending bills of the supplier or encashing available performance bank guarantee submitted against guarantee period or through any available sources with MSEDCL.

The clause itself shall be the notice to the supplier about encashment of PBG to adhere to the timelines.

The outage period, i.e. the period from the date of failure till unit is repaired / replaced shall not be counted for arriving at the guarantee period.

Further, in case of repeated failures of equipment's / material, the Purchaser reserves the right to debar / disqualify the supplier for future tenders / orders irrespective of grounds for debarring in MSEDCL debar policy.

21) LIFTING OF REJECTED/DAMAGED MATERIALS FROM STORES:

(a) On failure to replace or repair the transit damaged or rejected material within one month from the date of intimation as required under tender, it shall be deemed to have concluded that such material is finally rejected. The damaged / rejected material shall be lifted by the supplier within 30 days from the date of receipt of notice to that effect from the concerned consignee on reimbursement to the Purchaser of the cost of the material / equipment, if any, already paid in terms of payment clause in the contract and actual expenses incurred by the consignee towards handling, demurrage / wharfage / undercharges, freight, insurance premium etc. The Purchaser shall not be responsible in any case for the loss, destruction, damage, deterioration of the material after expiry of the said 30 days period.

(b) If the supplier fails to lift the material within this period, the material will remain with the Purchaser at the cost and risk of the supplier. Supplier shall, therefore, be liable to pay ground rent @ 0.1% (Plus GST as may be applicable) per day of purchase cost of the material to be lifted from the date of intimation of rejection till the actual date of lifting.

(c) The Purchaser will give 7 days notice for lifting of rejected material and if not lifted, will be also free to Scrap / dispose of such material, after the period of said 37 days, by Public auction /Tender notice/ Destruction as may be deemed fit and storage charges @ 0.1 % (Plus GST as may be applicable) per day of purchase cost will be recovered from the date of intimation of rejection of materials till the date of realization of the sale amount/physical removal of the material besides the actual expenses incurred as referred to at (a) above. The amount received from the sale of scrap/rejected material will be adjusted in the penalty.

Notwithstanding what is contended in the foregoing clauses, the supplier shall be liable to pay the Purchaser the cost and expenses incurred by the Purchaser, if any, including ground rent and the same shall be appropriated and recovered from the sale proceeds.

22) LIQUIDATED DAMAGES FOR LATE DELIVERY:

In case the materials are not delivered within the period stipulated in the order, the supplier shall be liable to pay at the discretion of the competent authority of the Purchaser, the

liquidated damages to the Purchaser @ 1% per week or part of week on the value of delayed material / unexecuted quantity plus taxes as applicable, if any on the price subject to a maximum of cumulative ceiling of 10% reckoned on the contract value of such complete portion or section of the plant, equipment or material delayed and also the portion supplied which could not be brought into commission due to any part thereof not having been delivered in time. In addition to above if bidder fails to supply the material within contractual delivery period continuously for 3 lots, then the order shall be liable for cancellation.

Due consideration may be given in the levy of liquidated damages for reasons absolutely beyond the control of the supplier, for which documentary evidence shall be produced to the satisfaction of the competent authority of the Purchaser.

The Purchaser shall be entitled to deduct/recover the amount of liquidated damages from the current bill payable to the supplier or any other amount due or payable to him against this or any other contract.

For computing the liquidated damages for delayed supplies, the date of railway receipt or the date of receipt of materials at stores in case of road transport, shall be the date of delivery.

In case the Purchaser does not arrange for inspection of material within 10 days from the date of receipt of inspection call in its office wherever applicable, the period of more than 10 days will not be considered for levy of liquidated damages. For computing the period taken for inspection in such cases, the relevant date mentioned in the inspection certificate issued by the inspecting officer would be considered.

23) ORDER PLACED ON TIME PREFERENCE BASIS (WHEREVER APPLICABLE):

In case of order on time preference basis (i.e. orders given at higher rate on delivery period considerations only) if order is given at higher rate of L-2 (or L-3 etc.), then the payment at higher rates will be made provided the firm makes supplies within the stipulated time period. In case of delay in supplies, the payment will be made at the rates offered by L-1. In addition, Clause No. 21 above for Liquidated Damages for late delivery will also be applicable. However, the quantity allocation for order under this clause shall be at the sole discretion of MSEDCL & the specified quantity allocation for this tender will not be applicable in this case.

24) FORCE MAJEURE CLAUSE:

If, at any time, during the continuance of this contract the performance in whole or in part by either party of any obligation under this contract shall be prevented of delayed by reason of any war, hostility, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restriction, strikes, lock-outs or acts of God (hereinafter referred to as "events"), provided notice of happening of any such eventuality is given by either party to the other within 21 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance; and deliveries under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of the purchasing officer as to whether the deliveries have been so resumed or not, shall be final and conclusive, provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 60 days, either party may at its option terminate the contract PROVIDED ALSO that it the contract is terminated under

this clause, the purchaser shall be at liberty take over from the contract at a price to be fixed by the purchasing Officer which shall be final all unused, undamaged and acceptable materials, bought out components and stores in course of manufacture in the possession of the contractor at the time of such termination or such portion thereof as the purchaser may deem fit accepting such material, bought out components and stores as the contractor may with the concurrence of the purchaser elect to retain.

25) ACCEPTANCE OF LOWER FORD RATE OFFERED IN SUBSEQUENT TENDER :

During contractual delivery period of supply , the quoted rates with PV / without PV shall remain the same , however for same specification of material if the rates will receive lower in another subsequent tender in extended period of contract then it is binding on the supplier to supply the same material at lower rate for balance quantity of material i.e. in case if price bid of next subsequent tender of similar technical specification is opened and FORD rate found lower than the ongoing contracts this FORD rate shall be made applicable for the balance quantity beyond contractual delivery period. Further the purchaser reserves the right to allow the supplier to deliver the quantity or otherwise beyond the contractual delivery period.

However other stipulations of clause No. 23 of Section-II i.e. Annexure-A will remain unchanged.

26) PERFORMANCE OF CONTRACT:

The Purchaser will not be in any way liable for non-performance either in whole or in part of any contract or for any delay in performance thereof in consequence of strikes, shortage, non-availability of raw materials, combination of labour or workmen or lockout, breakdown or accident to machinery or accidents of whatever nature, failure on the part of the railways to supply sufficient wagons to carry essential raw materials etc. and finished products from the stores, subject to the provision and stipulation made in condition No. 21 as stated above i.e. Liquidated damages for late delivery.

27) CONTRACT PERFORMANCE DEPOSIT:

26.1 The supplier will have to furnish contract performance deposit as per Annexure - N in the form of unconditional & irrevocable BG within 15 days from the date of issue of LoA, as mentioned in Clause 26.2.

26.2 The contract performance deposit shall be an amount equal to 5% of the contract value in two installments.

First performance deposit shall be equal to 2.5% of the contract value in the form of unconditional & irrevocable BG within 15 days from the date of issue of LoA & second performance deposit shall be equal to 2.5% of the contract value in the form of unconditional & irrevocable BG within 15 days after 6 months from the date of issue of LoA.

In case contract period is less than or 6 months, the supplier will have to furnish 1st installment equal to 2.5% of the contract value in the form of unconditional & irrevocable BG within 15 days from the date of issue of LoA & second performance deposit equal to 2.5% of the contract value in the form of unconditional & irrevocable BG before 2 months from the expiry of contract period.

26.3 The contract performance deposit shall be refunded within 90 days from the date of expiry of the guarantee period of the equipment supplied. The purchaser shall not be liable to pay any

interest or compensation to the contractor for retaining the deposit after the end of the said period.

26.4 The contract performance deposit is intended to secure the performance of the contract for guarantee period of the equipment supplied. However, it is not to be construed as limiting the damages stipulated in other clauses of the contract.

28) POWER OF ATTORNEY:

It will be obligatory on the supplier to communicate the revocation of Power of Attorney, if any, after submission of offer till the execution of contract failing which the act/s & action done by the agent/representative shall be deemed to be the valid act/s & action of the bidder/ supplier.

29) SETTLEMENT OF DISPUTE:

Permanent Dispute Resolution Committee (PDRC) comprises of Chief Engineer (MM Dept.), one member of Accounts Department and representative of supplier will resolve the dispute arise if any.

30) JURISDICTION:

Any disputes or difference arising under, out of or in connection with this tender or contract if concluded, shall be subject to the exclusive jurisdiction of the "Courts" in Mumbai.

31)TERMINATION OF CONTRACT

1) The decision of the Purchaser shall be final as regards the acceptability of the stores supplied by the supplier and the Purchaser shall not be required to give any reason in writing or otherwise at any time for the rejection of the stores/materials.

2) In case the contractor/supplier fails to deliver the stores/material or any consignment thereof within the contracted period of delivery or in case the stores/materials are found not in accordance with the prescribed specification and the performance of the supplied material is not found satisfactory, the Purchaser shall exercise in discretionary power either,

a) to purchase from elsewhere, after giving 15 days due notice to the contractor, at the risk of contractor, such stores/material not so delivered or other of similar description, without cancelling the contract in respect of consignment not yet due for delivery,

OR

b) to cancel the contract reserving Purchaser's right to recover damages Plus GST as may be applicable.

c) notwithstanding that the powers under (a) and (b) referred above are in addition to the rights and remedy available to the Purchaser under the General Law of India relating to contract.

d) Purchaser reserves right to recover damages against risk purchase or 10% value of non-supplied material plus applicable taxes, if any whichever is higher.

In the event of risk purchase of stores of similar description, the option of the Purchaser shall be final. In the event of action taken under (a) or (b) above, the

supplier shall be liable for any loss which the Purchaser may sustain on that account but the supplier shall not be entitled to any saving on such purchases made against default.

3) Further contract can be terminated in case of sub-standard /poor quality material.

32) DEBAR OF MANUFACTURER FROM PARTICIPATION IN TENDERS OF MSEDCL:

The Policy & Procedure for Debarring of Agency from Business Dealings with MSEDCL is provided on MSEDCL website link (https://www.mahadiscom.in/supplier/wp-content/uploads/2018/06/Final-Booklet-Single-Page.pdf) and forms the parts of tender document.

In case of failure on part of successful Bidder at any stage of tendering and execution, the Bidder may be debarred as per MSEDCL debar policy.

33)TAX DEDUCTED AT SOURCE:

The purchaser shall deduct tax at source in accordance with the provisions of the laws as and when the same is notified.

34)ADDITIONAL TERMS AND CONDITIONS FOR FOREIGN BIDDERS / MANUFACTURERS:-

Other terms and conditions applicable to the foreign bidders/ manufacturers are as under:

a) Offer:

The offer shall be submitted by foreign bidder/manufacturer directly or through their authorized Assignee/Nominee. However the order shall be placed on the said foreign bidder/manufacturer. In case offer is from Authorized Assignee/Nominee in India, the undertaking as per Annexure F-II for appointment of Authorized Assignee/Nominee shall be submitted by foreign bidder/manufacturer.

b) Taxes and Duties:

The foreign supplier shall be solely responsible for payments of all expenses incurred outside India and payments of charges incurred in India up to the destination store of MSEDCL including any or all taxes, fees or other charges and related expenditure for Assessable Custom Duty, Transport cost from port of entry to Destination Stores, inland insurance, other incidental charges, service tax, wharfage, demurrages, warehousing charges and so on imposed by any statutory and/or Governmental Authority for importing meters.

c) Custom Clearance:

The supplier shall be solely responsible for custom clearance either by its own or through its authorized Assignee/Nominee. The supplier shall ensure the availability of required documents for speedy custom clearance. If the cargo clearance gets delayed on account of non availability of required documents or any other reason the damages if any shall be borne by the supplier. MSEDCL will provide necessary documents for custom clearance in accordance with prevailing rules as and when requested by successful bidder.

d) The quantity to be delivered to the consignee i.e. store destination may not be necessarily in full wagon load/ truck load/container load and it may be part load as per purchasers requirement.

e) Terms of Payment:

Standard payment clause no. 16 of Section-II (Annexure-A) shall be applicable. However cheques may be drawn in favour of Assignee/Nominee if desired by the foreign supplier.

f) Pre dispatch inspections of the material at the Factory shall at the discretion of the Purchaser.

g) Earnest Money Deposit (EMD):

Earnest Money Deposit as per Clause No. XIX of invitation to tender and instruction to Bidders (Section-I) shall be paid by foreign bidders/ manufacturers or their authorized Assignee/Nominee.

h) Contract Performance Deposit :

Contract Performance Deposit clause is applicable as per Cllause (26) of Section-II (Annexure-'A') for foreign bidders/ manufacturers.

All other terms and conditions, technical specifications of tender document shall be applicable. Wherever above conditions overlap with conditions of tender document then conditions modified to the extent above shall prevail.

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ANNEXURE - "B"

QUANTITY, PRICE AND DELIVERY PERIOD

ANNEXURE - "B" to be submitted online against commercial bid; attached separately

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ANNEXURE 'C-I'

[To be submitted later on as per as per Clause XVIII (B) of Instructions]

CONFIRMATION FOR ACCEPTING ORDER BY MATCHING RATES WITH LOWEST ACCEPTABLE BIDDER

APPLICABLE FOR INDUSTRIAL UNITS FROM MAHARASHTRA ONLY Marketing Assistance and Purchase Preference to the units from Maharashtra (refer Clause XVIII of Instructions to Bidders):-

1. (a) In case your unit is located in Maharashtra and the lowest acceptable rate received against the tender is from the unit outside Maharashtra, please confirm whether you are agreeable to accept order at that lowest acceptable rate limited to 50% (fifty percent) of our requirement. .....

APPLICABLE FOR ALL BIDDERS INCLUDING THOSE ELIGIBLE UNDER THE ABOVE CLAUSES:

1. (b) Please confirm whether you are agreeable to accept order at the lowest acceptable rate received against the tender. .....

[Industrial units from Maharashtra can give option under 1(b) above for balance quantity]

Note:-

1. If the bidder gives the above confirmation for the quantity less than as indicated in Clause X(iii) of the Instructions to the Bidders, then the above confirmation shall not be acceptable.
2. Bidders may confirm matching for one or more items originally tendered.
3. Any withdrawal of confirmation for order by matching rate within validity of offer will render the entire offer invalid and shall be summarily rejected and Earnest Money Deposit shall stand forfeited.
4. A bidder will not be entitled to the benefit of offers by matching rates and will not be considered for orders if his original offer is rejected on the ground of ambiguity or because of not accepting/noncompliance of the terms & conditions of the tender.
5. In the above confirmation, if the bidder indicates any rate, then the above confirmation given by the bidder will not be considered as valid.

ANNEXURE- 'D'

TECHNICAL SPECIFICATION FOR

As indicated in E-Tendering website

ANNEXURE-E

(On bidders' letter head)

CONSENT FOR SUPPLYING THE MATERIAL AS PER MSEDCL STANDARD TECHNICAL SPECIFICATIONS.

I/We, …….. have understood and checked the tender documents for supply of Three phase four wire CT/ PT operated 1 Amp & 5 Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.2S & 0.5S accuracy class as per category "C" of IS:15959/2011 and have not found any errors in them.

We have submitted price bids for Tender No. MMD/T-NSC-02/0321 for Three phase four wire CT/ PT operated 1 Amp & 5 Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.2S & 0.5S accuracy class as per category "C" of IS:15959/2011.

We hereby declare and confirm that we accept the MSEDCL STANDARD TECHNICAL SPECIFICATIONS and agree to supply the material as per these STANDARD TECHNICAL SPECIFICATIONS if we are awarded the supply order.

In view of above, I/we have not filled the online GTP.

I/we am/ are enclosing the Type Test Report details covering all the type tests as per relevant IS as below.

Sr. No.	Details of Tests as per IS:……..	Type Test Report No. & Date
(1)		
(2)		

Yours faithfully,

Signature & Seal of company,

In the capacity of duly authorized to sign bids for and on behalf of

Address:

ANNEXURE – 'F-1'

"INDEMNITY BOND"

UNDERTAKING TO BE SUBMITTED BY THE PARENT COMPANY SITUATED ABROAD IN CASE OF THE PARTICIPANT BIDDER WHO IS AN INDIAN BASED SUBSIDIARY ON GENERAL STAMP OF RUPEES 200/-

The Chief Engineer (MMD),
Maharashtra State Electricity Distribution Co. Ltd.,
Prakashgad,
Bandra (E),
Mumbai – 400 051.

Sub: Undertaking against Tender _____ for procurement of _____.

Dear Sir:

We, M/s. _____ having registered office at _____ are the Parent Company of M/s. _____ who have participated against your tender no. _____ for procurement of _____.

We have carefully read and have thoroughly understood and agree to the terms and conditions of the subject tender.

We hereby undertake that in case of placement of order against the subject tender on our subsidiary company, M/s. _____, in the event of we accept all the responsibilities and liabilities for supply of quality meters as per specification of the tender and execution of the contract. We further hereby undertake that we shall be responsible for any liability arising out of the contract placed on M/s. _____ and to pay MSEDCL on demand the sum of rupees as per agreement in the event of any breach of condition of the purchase order, loss and damage of the material till expiry of guarantee period as stipulated in the order. Our liability here under shall not be impaired or discharged by extension of time or variation or alteration made with or without our knowledge or consent by or between the parties to the said contract. This undertaking shall be valid and binding on us upto and including the execution and guarantee period of the order and shall not be terminable by notice or change in the constitution of any of the companies. In case of any dispute arising out of or in connection with this tender or contract, if concluded, the same shall be subject to the exclusive jurisdiction of the "Court in Mumbai (India)."

Yours faithfully,

(Authorised Signatory)

For _____

ANNEXURE – 'F-2'

FORM OF AUTHORISED NOMINEE/ASSIGNEE

(To be submitted on the letter head of the foreign Bidder/Manufacturer)

Date:

To,
The Chief Engineer (MMD),
Maharashtra State Electricity Distribution Co. Ltd.
1st Floor, Prakashgad, Plot No. G-9,
Bandra (East) Mumbai – 400 051.
India

Subject:- Notification of invitation of bids against Tender No. ----------
For supply of Static Energy Meters of foreign origin.

Dear Sir,

This has reference to the Tender No. ---------- for supply of Static Energy Meters. We M/s. ---------- (foreign Bidder/Manufacturer) authorize our Assignee/Nominee in India M/s. ---------- to participate against Tender No. ----------. We M/s. ----------(foreign Bidder/Manufacturer) hereby agree, confirm, adopt unconditionally to abide by the offer of M/s. ---------- (Assignee/Nominee) for supply of Static Energy Meters.

Thanking you,

Your's Faithfully,

(Signature of the Authorized Signatory of foreign Bidder/Manufacturer)

(Name)

(Designation)

ANNEXURE – G

UNDERTAKING CUM INDEMNITY BOND TO BE GIVEN BY THE BIDDERS ALONG WITH THE OFFER IN CASE OF SUBMISSION OF OFFER ALONGWITH ENCLOSURES MANUFACTURED BY POLYCARBONATE MATERIAL ON GENERAL STAMP OF RUPEES 500/-

UNDERTAKING CUM INDEMNITY BOND

This undertaking cum Indemnity Bond is executed on this _____day of _____ 2017 by M/s. _____ _____a Company incorporated under The Companies Act, 1956 and having its registered office at _____(hereinafter referred to ----------, which expression shall, unless repugnant to the context or otherwise meaning thereof, be deemed to include its successors, heirs, attorney, permitted assignees), in favour of MSEDCL, a Company incorporated under The Companies Act, 1956 and having its registered office at _____(hereinafter referred to ----------, which expression shall, unless repugnant to the context or otherwise meaning thereof, be deemed to include its successors, heirs, attorney, permitted assignees).

Whereas, I/we M/s. _____ have participated in Tender No. ---------- of MSEDCL, for the supply of the materials with specifications meter with polycarbonate enclosure.

And whereas necessary materials as specified hereinabove is required to be supplied which may cause any nuisance to or otherwise detrimental to the environment or otherwise may be unhygienic or affecting public health, therefore to indemnify MSEDCL against any losses/ damages, cost or consequences arising out of or pertaining to, any litigations in respect thereof, if any, the present indemnity Bond is executed to Indemnify MSEDCL towards and thus witnesses hereof --

1. That we undertake to take back polycarbonate materials.

2. That we undertake the entire liability in respect of taking back such material in future after the expiry of the life of such specified materials.

3. That we undertake to take all the due care that such materials may not cause any harm to environment or otherwise detrimental to it.

4. That we undertake all the responsibility / liability in respect thereof and MSEDCL will not be responsible or liable for the same

5. And we hereby agree that in case of the breach of any of above terms and conditions on our part, MSEDCL, shall be entitled not only to cancel the Work Order/ terminate the Contract, but also to take appropriate action in respect thereof and in case any losses/damages, cost & consequences etc., if suffered by MSEDCL, due to such non-performance, part performance or otherwise, giving birth to any litigation, the same shall be indemnified by I/we M/s. ---------- and MSEDCL shall also be authorized/empowered to recover the same from us including any amount payable to us, by way of payments against invoices raised from time to time , any SD, retention amount or otherwise etc. our personal assets/ properties.

Executant

Proprietor/ partner/ authorized
Director/Representative

In the presence of Witness

1. Sign :
   Name :
   Address :

2. Sign :
   Name :
   Address :

Annexure - H

GUARANTEED TECHNICAL PARTICULARS

As indicated in E-Tendering GTP Parameter

Annexure- I

(On supplier's Letter Head)

I, ... certify that,

a. The business dealings with our firm / agency M/s…….. have not been debarred by any Ministry of GoI / GoM / state owned electricity distribution utility and still in force.

b. The Directors, Proprietors, Partners, Employee(s) or owner of our firm / agency M/s…….. have not been either jointly or severally guilty of malpractices in relation to its business dealings with the Government or MSEDCL during the last five years.

I hereby certify that I am duly authorized representative of M/s.---------- whose name appears above my signature.

Bidders Name:

Authorized representative's signature:

Authorized representative's Name:

Seal of the company

Name and address of the Bidder

Date:

Annexure- J

(On MSEDCL Letter Head)

Dispatch Instructions

BY R. P. A. D. / ORD. POST /E-MAIL

(SAP CONTRACT No: ----------)

To,

M/s. ----------

Email: ----------

Sub: Supply of ---------- against A/T No. ---------- dt. ----------

Ref: Final Inspection Call letter No. ---------- dt. ----------.

(I.W. Regn. No. ------- dt. ----------)

Your readiness of material letter no. …….. dtd……..

Dear Sir,

With reference to the above, you are requested to dispatch …….. as given below:

Sr. No.	Consigned to	Meant for Circle	Meant for Zone	Qty. in Nos.

Further, you are requested to contact concerned S.E. (O&M) Circle / E.E. (O&M) Division / Addl. E.E. (MM Section) before dispatching / unloading the above material.

This is issued without prejudice to all other terms and conditions of the order.

Yours faithfully,

Chief Engineer (M M Dept.)

Copy f.w.cs. to: The C.E., MSEDCL, ----------.

Copy to:

The G.M. (F & A – SB), MSEDCL, Mumbai.

The E.E. (IW), MSEDCL, Mumbai.

The E.E. (O & M Division), MSEDCL, ----------

The Addl.E.E. (MM Section), MSEDCL, ----------

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Annexure- K

List of Stores

Sr. No.	Name of Stores	Address
1	Common Stores Ahmednagar	Nagar-Pune Road, Opp. Arti Hotel, Kedgaon, Ahmednagar.
2	Common Stores Airoli	Power House, Thane-Belapur Road, Airoli, Navi Mumbai.
3	Common Stores Akola	Major Store Babhulgaon NH No 6 Akola.
4	Common Stores Amravati	Major Store MSEDCL Power House, Mulshi Road, Amravati.
5	Common Stores Aurangabad	MIDC Plot No. J-13, Opp. Garware Stadium, Naregaon Phata, Chikhalthana, Aurangabad.
6	Common Stores Beed	Near 132 kV Sub-station, Idgah Nagar, Nalvandi Naka, Beed.
7	Common Stores Chandrapur	Near Vidyut Bhavan, Bagala Chaowk, Babu Peth, Chandrapur.
8	Common Stores Jalgaon	Old MIDC Area, Behind Ajanta Lawns, Ajanta Road, Aurangabad Highway, Jalgaon.
9	Common Stores Kalyan (Netivali)	MIDC Phase 1, Near Tata Power House, Kalyan - Dombivali Road
10	Common Stores Kamptee	Maldhakka Godown, Behind Railway Station Kamatee, Nagpur.
11	Common Stores Khamgaon	Manav Dharm Bld. Near 132 kV Sub-Station, Shegaon Road, Khamgaon, Dist. Buldhana.
12	Common Stores Kolhapur	Kaneri Math Road, A/P Gokulshirgaon, Tal. Karveer, Dist. Kolhapur.
13	Common Stores Kudal	Malwan Road, MIDC Pinguli-Nerur, Kudal, Sidhudurg.
14	Common Stores Latur	MIDC Plot No. P-21/P, In Front of Kirti Gold Oil Mill, Latur.
15	Common Stores Mulshi	Phursungi-Saswad Road, Near Overhead Bridge, Mulshi/ Phursungi, Dist. Pune.
16	Common Stores Nanded	Taroda Naka Main Road, Nanded.
17	Common Stores Nashik	Aringale Plot, Hanuman Nagar, Jail Road, Juna Saykheda Road, Panchak, Nasik.
18	Common Stores Osmanabad	Near MSEDCL Rest House, Tuljapur Road, Osmanabad.
19	Common Stores Palghar	Near 33/11 kV Sub-Station, MSEB Coloney, Boisar Road, Palghar.
20	Common Stores Parabhani	Old Power House Jintur Road, Parbhani.
21	Common Stores Ratnagiri	MIDC Area Mirjole, Kuwarbav, Ratnagiri.
22	Common Stores Sangli	Near Walchand Engineering College, Vishram Baug, Sangli.
23	Common Stores Satara	A/P Satara, Tal. Koregaon, Dist. Satara.
24	Common Stores Solapur	Plot No P-4, MIDC Chincholi, Behind Post Office, Solapur
25	Common Stores Tumsar	Near Power House, Nakaq Dongari Road, Old Bus Stop, Tumser, Bhandara.
26	Common Stores Yavatmal	MIDC Lohara, Yavatmal.

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ANNEXURE – M

BANK GUARANTEE FORMAT

EARNEST MONEY DEPOSIT BANK GUARANTEE AGAINST TENDER

B.G. No. & DATE:

The Bank of _____(full address of Branch) hereby agree unequivocally and unconditionally to pay, at Mumbai within 48 hours, on demand in writing from the MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION CO. LTD. (name of the company formerly known as M.S.E.B.) on behalf of M/s _____(Address as per MSEDCL REGISTRATION) who have tendered and/or contracted or may tender or contract hereafter for supply of materials. Equipments or services to the MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION CO. LTD. against Tender No. ---------- dated ---------- total value of Tender is Rs. ----------

This agreement shall be valid and binding on this Bank up to and including validity (date) and shall not be terminable by notice or any change in the constitution of the Bank or the firm of contractors or any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made given conceded or agreed with or without our knowledge or consent by or between parties to the said within written contract. The validity of this Bank Guarantee will be extended by us for the further period of six months, one month prior to its present validity period at the request of MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION CO. LTD.(name of the company-formerly known as M.S.E.B.).

In case of any dispute arising out or it connection with the extension or encashment of Bank Guarantee, the Courts in Mumbai will have jurisdiction.

Our liability under this Guarantee is restricted to Rs.----------/- (Rupees---------- only). Our Guarantee shall remain in force until (date). Unless a suit or action to enforce a claim under the guarantee is filed against us within six months from the aforesaid date, all your rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liability there under.

Place:

Date: Sign----------

For----------

(Banker's Rubber Seal & Bank Code No. of signatory)

Please note that:

1. The value of non-judicial stamp paper for this Bank Guarantee is Rs.200/- should be purchased in the name of Guarantor Bank.
2. The Bank Guarantee should be furnished from any Scheduled Bank/Nationalized Bank.
3. Please state the full and complete postal address of the Bank undertaken the guarantee.
4. The Bank Guarantee may be valid as per terms and condition of A.T.
5. B.G. should be submitted along with covering letter of Bank.

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ANNEXURE – N

BANK GUARANTEE FORMAT

FORM OF BANK GUARANTEE FOR THE PERFORMANCE OF THE EQUIPMENT

B.G. No. & Date:

This deed of Guarantee is made this ……..day of…….. By……branch having at H.O. at…….. (here in after called "the Surety" which expression shall where the context so admits include its permitted assign) in favour of MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION COMPANY LTD. (name of the company formerly known as M.S.E.B.) being a government company formed as per the provisions of the Maharashtra Electricity Reforms Transfer Scheme. 2005 having its registration no. U40109 MH 2005 SGC 153645 (here in after called the "Creditor" which expression shall include its permitted assigns). WHERE AS M/s. (Name of Party)…….. (Postal address as per A/T) have entered into a contract to supply (Name of Material) to the MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION COMPANY LTD. (Name of the Company formerly known as M.S.E.B.). vide contract No. ……dtd……..on the terms and conditions in the said contract. (here in after for brevity sake called "the said contract").

In accordance with terms of the said contract, the creditor has agreed to pay to M/s……..(|Name of Party)……. the said sum representing the 5% of the total contract price for the Rs……../- and WHEREAS M/s. …….. (Name of Party)…….is required under the terms of contract to furnish a Bank Guarantee for Rs……../- (Rupees:…….Only) the said sum representing the 5 % ……price as given in the said contract.

The surety as he requests of M/s. ……(Name of Party)…. has agreed to give this guarantee.

NOW THEREFORE THIS DEED WITNESS AS FOLLOWS:

1. In consideration of the creditor agreeing to make to the debtor at Mumbai the payment of Rs…….. (Rupees……only) being the value of 10% of the total contract ……price as given in the said contract on supplying the complete material as per the contract by the debtor failing which the surety does undertake to pay to the creditor on demand such amount of amounts as the surety may be called upon to pay not exceeding in the aggregate sum of Rs. ……../- (Rupees……..only).
2. The surety hereby guarantee to the creditor the due performance and observance by the debtor of the terms and conditions of the contract.
3. The surety also agrees that it shall not during the currency of the guarantee herein given or during the period of its execution revoke the same even by giving notice to the creditor.
4. On account of the non-fulfillment of the contractual obligation by the debtor or in case the surety or contractor do not renew this guarantee bond as herein provided, the surety will on simple demand from the creditor, pay at Mumbai the creditor, the sum of Rs……..(Rupees …… .only) as indicated under clause -1 above, without demure and without the creditor to invoke any legal remedy that may be available to them to compel the surety to pay the same even if the debtor consider such demand of the creditor unjustified.
5. The surety agrees and declares that notwithstanding anything contained in Section 133 to 135 of the Indian Contract Act 1872 (IX of 1972) or any other rule of law or equity in the

view of any variance in the terms of the said contract shall not operate as a discharge of his obligations hereunder or shall any composition made by the creditor with debtor in respect of any breach of the terms and conditions of the said contract operate as a discharge of the surety's obligation and surety further expressly agrees and declares that though as between the creditor and surety, the surety shall be liable for sum payable or falling due hereunder equally with the debtor and the surety save as otherwise herein provided hereby waives all his rights which he might as guarantor be entitled to claim and enforce.

6. The decision of the creditor that any sum has become payable shall be final and binding on the surety.
7. The guarantee shall come into force on supply of material shall remain in force till the end of ……(date) ….The surety, at the request of the creditor shall extend the validity of the Bank Guarantee for a further period of 12 months, one month prior to its present validity period.
8. In case of any dispute arising out of or in connection with the extension or encashment of the Bank Guarantee, the courts in Mumbai will have the jurisdiction.
9. The guarantee herein contained shall not be effected, by the change in the constitution of the surety or the debtor.
10. Our liability under this guarantee is restricted to Rs. ……..(Rupees……only) and our guarantee shall remain in force until (Date….) unless a claim under this guarantee is lodged with us within six months from the date of expiry of guarantee i.e. on or before ..(date)…all your rights under this guarantee shall be forfeited and we shall be relieved and discharged from all our liabilities there under.

IN WITNESS WHERE OF THE surety has executed this deed in presence of

Place: Signature……..

Date: for……..

(Banker's Rubber Seal & Code No. of signatory)

Witnessed (2 witness is required from bank only)

1) Name & Address

Signature

2) Name & Address

Signature

Please Note:

1. The value of non-judicial stamp paper for this bank guarantee is Rs. 200/- should be purchased in the name of Guaranteed Bank.
2. The bank guarantee should be furnished from any Scheduled bank
3. Please state the full and complete postal address of the bank undertaking the guarantee.
4. B.G. may be valid as per terms of A/T including guarantee period of material.
5. B.G. should be submitted along with covering letter of Bank.

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SCHEDULE C

Quantity Offered at Column No. 6 of Annexure-'B' (Price Schedule):

Sr. No.	Item Code	Material Description	Quantity Tendered in Nos.	Quantity Offered at Column No. 6 of Annex-'B' (Price Schedule) in Nos
1	2	3	4	5
1	77001119834	Three phase four wire CT/ PT operated 5 Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.5S accuracy class as per category "C" of IS:15959/2011	2,227	
2	77001118194	Three phase four wire CT/ PT operated 1 Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.5S accuracy class as per category "C" of IS:15959/2011	22	
3	77001118434	Three phase four wire CT/ PT operated 5 Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.2S accuracy class as per category "C" of IS:15959/2011	1,778	
4	77001118784	Three phase four wire CT/ PT operated 1 Amp fully static AMR Compatible HT TOD Tri-Vector Energy Meter of 0.2S accuracy class as per category "C" of IS:15959/2011	276	
		TOTAL :	4,303	

Seal & Signature of Supplier

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Format for Inspection Call-Readiness of Material

Ref. No. **Date:**

To,
The CE (MMD),
Prakashgad, Bandra (E),
Mumbai - 400051.

Sub: Inspection Readiness of material against A/T No. ---------- dated. ---------- for Supply of ----------.

……..

1. Brief description of the material Offered for inspection:
2. Reference of drawing Approval :
3. a) Reference of approval of type test:
   b) Reference of approval of balance type test (If applicable):
4. Whether it is a joint inspection with Testing SE (TQA) etc. (if applicable):
5. a) Whether EMD has been paid against the order:
   b) if paid, please give details:
6. Sr. No. of the items as per A/T:
7. Total Quantity of the items Ordered:
8. Total quantity of the items inspected so far:
9. a) Quantity monthly committed in delivery schedule:
   b) Lot No. for which the Quantity is offered for inspection now:
   c) Due date of delivery as per A/T for offered quantity:
10. Date of readiness of Material:
11. Complete address of the factory where materials is to be inspected:
12. Name of the person to be contacted in connection with inspection & his Office/Factory/Residence Tel. No.:
13. Staggering holiday of Factory/Office at the place of inspection:
14. a) Whether Dispatch Instructions are available (Say Yes or No):
    b) Quote Letter No.:
    c) Brief destination & Qty. per consignee of this present lot offered:
15. Last visit of our Inspecting Officer:
16. a) Whether the entire material is dispatched against last inspection. (Our EE[IW] will ensure before inspection of this lot that the earlier inspected lot is already dispatched)
    b) Quantity dispatched
17. Further programme of production Quantity likely to be offered & by what date:

Authorized Signature
For (Name of the Firm).

Annexure 'B'(Price Schedule)

Sr.No	Item Code	Material Description	Unit	Quantity Required	HSN	Quantity Offered	Unit ExWorks including packaging charges but excluding duties & taxes etc (In Rupees)	Freight Charges Per Unit (In Rupees)	Transit Insurance Charges Per Unit (In Rupees)	Integrated GST for outside State Transaction on (Ex-Works Price+Freight Charges + Transit Insurance Charges)(In Rupees)	Central GST for within State Transaction on (Ex-Works Price + Freight Charges + Transit Insurance Charges)(In Rupees)	State GST for within State Transaction on (Ex-Works Price + Freight Charges + Transit Insurance Charges)(In Rupees)	Free Door Delivery Price Per Unit by Road upto Destination/Stores/Sub Station (In Rupees)
1	2	3	4	5	6	7	8	9	10	11	12	13	14=(8+9+10+11+12+13)
1	77001118194	3P4WCT/PT 1A AMR HT TOD MET 0.5S F.L.-A	NO	22	90283010								
2	77001118434	3P4WCT PT 5A AMR HT TOD METER OF 0.2S F.	NO	1778	90283010								
3	77001119834	3P4WCT PT 5A AMR HT TOD MET 0.5S-F.L-A	NO	2227	90283010								
4	77001118784	3P4WCT/PT 1A AMR HT TOD MET	NO	276	90283010								

Annexure 'B'(Price Schedule)

Sr.No	Item Code	Material Description	Unit	Quantity Required	HSN	Quantity Offered	Unit ExWorks including packaging charges but excluding duties & taxes etc (In Rupees)	Freight Charges Per Unit (In Rupees)	Transit Insurance Charges Per Unit (In Rupees)	Integrated GST for outside State Transaction on (Ex-Works Price+Freight Charges + Transit Insurance Charges)(In Rupees)	Central GST for within State Transaction on (Ex-Works Price + Freight Charges + Transit Insurance Charges)(In Rupees)	State GST for within State Transaction on (Ex-Works Price + Freight Charges + Transit Insurance Charges)(In Rupees)	Free Door Delivery Price Per Unit by Road upto Destination/Stores/Sub Station (In Rupees)
1	2	3	4	5	6	7	8	9	10	11	12	13	14=(8+9+10+11+12+13)
0.2S F.L-A													

Delivery Details
[Delivery must in the units specified for the items as per Price Schedule]
First lot of ___ in assorted sizes will be delivered within 2 Months from the date of LOA Award.After this period supply will be completed at the rate of ___ in assorted sized per month

Confirmation Details
We Confirm The Following :
I) Goods and Services Tax(GST) i.e Integrated GST / (Central GST+ State GST):
The GST is included in our prices quoted in price bid (Central GST+ State GST) for within Maharashtra State/Integrated GST for outside State and we shall not charge any additional amount towards Integrated GST / (Central GST+ State GST), during currency of contract except statutory variation by Central / State Government in normal (full) rate of Integrated GST / (Central GST+ State GST), in case of Integrated GST / (Central GST+ State GST) Rate is increased. In case the Integrated GST / (Central GST+ State GST) is decreased than the rate indicated in the price bid, the benefits of the reduction in the Integrated GST / (Central GST+ State GST) shall be passed on to the Purchaser.The increase in the Integrated GST / (Central GST+ State GST) rate due to increase in turnover during the contractual delivery period shall not be charged to the Purchaser .If the Integrated GST / (Central GST+ State GST) is not payable at present,we shall not charge the same, if it becomes applicable during the currency of contract due to expiry / withdrawal of tax concessions and incentives during the currency of contract except for statutory variation by Central / State Government.
(i) Necessary documentary evidence for the GST claimed by us shall be submitted along with the bills.
(ii) We here by declare that while quoting the price in the Price Bid, we have taken into account the entire credit on inputs available under the GST Act.

Technical Specification Item: 3P4wCT PT 5A AMR HT TOD met 0.5S-F.L-A

Maharashtra State Electricity Distribution Company Limited

SPECIFICATION NO.MMC: MSC/DB/01

TECHNICAL SPECIFICATION

For

3P4WCT PT 5A AMR HT TOD MET 0.5S-F.L-A

For

DISTRIBUTION SYSTEM

IN

MSEDCL

MATERIAL SPECIFICATIONS CELL

TECHNICAL SPECIFICATION

THREE PHASE FOUR WIRE CT / PT OPERATED
0.5 S CLASS, 1 AMP OR 5 AMPS ENERGY METER
AS PER CATEGORY "C1" OF IS: 15959

Contents

1.00 SCOPE

This specification covers design; manufacture, testing, supply and delivery of ISI mark HT three phase four wire CT / PT operated 1 Amps or 5 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter as per Category C1 of IS: 15959 / 2011 amended upto date. The meters shall be suitable for measurement of Active Energy (kWh), Reactive Energy (kVArh) Lag and (kVArh) Lead separately, Apparent Energy (kVAh), demand (kW), demand (kVA), etc. as per Power tariff requirement for AC balanced / unbalanced loads of HT Consumers.

The meter 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 purchaser, who will interpret the meaning of drawings and specification and shall have the power to reject any work or material which, in his judgment is not in accordance therewith. The offered material shall be complete with all components necessary for their effective and trouble free operation. Such components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specifically brought out in these specifications and / or the commercial order or not.

2.00 APPLICATION

For use on HT consumer installations.

3.00 SERVICE CONDITIONS

As per IS: 14697 / 1999 (amended up to date), the meter must perform satisfactorily under Non-Air Conditioned environment (within stipulations of IS). The meters to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

Environmental Conditions

(a) Maximum ambient temperature	55^0 C
(b) Maximum ambient temperature in shade	50^0 C
(c) Minimum temperature of air in shade	5^0 C
(d) Maximum daily average temperature	40^0 C
(e) Maximum yearly weighted average temperature	32^0 C
(f) Relative Humidity	10 to 95 %
(g) Maximum Annual rainfall	1450 mm
(h) Maximum wind pressure	150 Kg/m^2

(i) Maximum altitude above mean sea level	1000 mtrs
(j) Isoceraunic level	50 days/year
(k) Seismic level (Horizontal acceleration)	0.3 g

(l) Climate: Moderately hot and humid tropical climate conducive to rust and fungus growth.

4.00 STANDARD TO WHICH METER SHALL COMPLY

IS: 15959 / 2011 – Data Exchange for Electricity Meter Reading, Tariff and Load Control – Companion Specification for Category – "C1" Meters amended upto date;

IS: 14697 / 1999 (amended up to date) – AC Static Transformer operated Watt-hour and VAR-hour Meters, Class 0.5S – Specification;

CBIP Tech Report 325 amended up to date for AC Static Transformer operated Watt Hour & VAR-Hour Meters (class 0.5S);

IS: 15707 / 2006 Specification for Testing, evaluation, installation & maintenance of AC Electricity Meters-Code of Practice;

CEA regulations and MERC guidelines with latest amendments.

The specifications given in this document supersedes the relevant clauses of IS: 14697 / 1999 (amended up to date) wherever applicable.

The equipment meeting with the requirements of other authoritative standards, which ensures equal or better quality than the standards mentioned above, also shall be considered.

In case the bidder wishes to offer material conforming to the other authoritative standards, salient points of difference between the standards adopted and the specific standards shall be clearly brought out in relevant schedule.

Copy of such standards with authentic English Translations, shall be furnished along with the offer.

In case of conflict related with communication protocol, the IS: 15959 / 2011 – Data Exchange for Electricity Meter Reading, Tariff and Load Control – Companion Specification shall prevail upon.

For conflict related with other parts of the specification, the order of priority shall be – (i) this technical specification, (ii) IS: 14697 / 1999 (Amended up to date), (iii) IEC, (iv) other authoritative standards.

In case of any difference between provisions of these standards, the provisions of this specification shall prevail.

5.00 GENERAL TECHNICAL REQUIREMENT

1)	TYPE	Three Phase, Four Wire 1 Amp or 5 Amps fully Static AMR compatible TOD Tri - Vector Energy Meter with Optical & RS 232 Port as per Category C1 of IS: 15959 / 2011 (with DLMS protocol) for use on HT Consumers installation.
2)	FREQUENCY	50 Hz ±5%
3)	ACCURACY CLASS	0.5S (FOR ACTIVE AND REACTIVE ENERGY)
4)	PT SECONDARY VOLTAGE	63.5 V Ph-N
5)	RATED VOLTAGE	110 V Ph-Ph or 3 x 63.5 V Ph-N
6)	VOLTAGE RANGE	+15% to – 30% of rated voltage.
7)	PT RATIO	$\frac{11}{\sqrt{3}}$ kV/$\frac{110}{\sqrt{3}}$ V
8)	CT RATIO	1 / 1 Amps; 5 / 5 Amps
9)	BASIC CURRENT (I_b)	1 Amp; 5 Amps.
10)	MAXIMUM CONTINUOUS CURRENT (I_{max})	2 times (200 %) of Ib.
11)	SHORT TIME CURRENT	As per IS: 14697 / 1999.
12)	STARTING CURRENT	0.1% of Ib.
13)	POWER CONSUMPTION	The active and apparent power consumption, in each voltage circuit, at reference voltage, reference temperature and reference frequency shall not exceed 1.0 W and 4 VA. The apparent power taken by each current circuit, at basic current Ib,

		reference frequency and reference temperature shall not exceed 2 VA.
14)	POWER FACTOR	Power Factor range: Zero Lag to unity to Zero Lead to unity Avg. P.F = Total(kWh) / Total (kVAh) $kVAh = \sqrt{(Kwh)^2 + (RKVAhlag + RKVAhlead)^2}$
15)	DESIGN	Meter shall be designed with application specific integrated circuit (ASIC) or micro controller; shall have no moving parts; electronic components shall be assembled on printed circuit board using surface mounting technology; factory calibration using high accuracy (0.1 class) software based test bench.
16)	POWER SUPPLY	SMPS
17)	ISI MARK	The meter shall bear ISI Mark
18)	TEMPERATURE	The standard reference temperature for performance shall be 27^0 C. The mean temperature co-efficient shall not exceed 0.03%.

6.00 CONSTRUCTIONAL REQUIREMENT

6.01 GENERAL MECHANICAL REQUIREMENT

The meter shall be designed and constructed in such a way as to avoid introducing any danger in normal use and under normal conditions, so as to ensure especially:

(a) personal safety against electric shock:

(b) personal safety against effects of excessive temperature;

(c) safety against spread of fire;

(d) Protection against penetration of solid objects, dust and water.

(e) Detection of fraud / pilferage

6.02 The meter shall be projection type and shall be dust and moisture proof. All parts that are likely to develop corrosion under normal

working condition shall be effectively protected against corrosion by suitable method to achieve durable results.

6.03 All insulating materials used in the construction of the meter shall be substantially non-hygroscopic, non ageing and of tested quality.

6.04 METER CASE

6.04.01 The meter base & cover shall be made out of unbreakable, high grade, fire resistant Polycarbonate material so as to give it tough and non-breakable qualities. Meter base shall be opaque and meter top cover shall be transparent.

6.04.02 The poly carbonate body of the meter shall conform to IS: 11731 / 1986 (FV-2 Category) besides meeting the test requirement of heat deflection test as per ISO 75, glow wire test as per the IS: 11000 (part 2/SEC-1) 2008 OR IEC PUB 60695-2-12, Ball pressure test as per IEC-60695-10-2 and Flammability Test as per UL 94 or as per IS: 11731 (Part-2) 1986.

6.04.03 The Poly-carbonate opaque base and transparent top cover of meter shall be ultra-sonically welded (continuous welding) so that once the meter is manufactured and tested at factory; it shall not be possible to open the cover at site except the terminal cover. The thickness of material for meter cover and base shall be 2 mm (minimum).

6.04.04 The meter body shall be type tested for IP51 degree of protection as per IS: 12063 against ingress of dust, moisture & vermin. The type test certificate shall be submitted along with the offer.

6.04.05 The meter cover shall be secured to base by means of sealable unidirectional captive screws with two holes.

6.05 TERMINALS & TERMINAL BLOCK

6.05.01 The terminal block shall be made from high quality non-hygroscopic, fire retardant, reinforced polycarbonate / non-Bakelite material which shall form an extension of the meter case.

6.05.02 The material of which the terminal block is made shall be capable of passing the tests given in IS: 1336O (Part 6/Sec 17), ISO 75-1 (1993) & ISO 75-2 (1993) for a temperature of 135^0C and a pressure of 1.8 MPa (Method A).

6.05.03 The holes in the insulating material which form an extension of the terminal holes shall be of sufficient size to also accommodate the insulation of the conductors.

6.05.04 The manner of fixing the conductors to the terminals shall ensure adequate and durable contact such that there is no risk of loosening or undue heating.

6.05.05 Screw connections transmitting contact force and screw fixings which may be loosened and tightened several times during the life of meter shall screw into metal nuts.

6.05.06 All parts of every terminal shall be such that the risk of corrosion resulting from contact with any other metal part is minimized.

6.05.07 Electrical connections shall be so designed that contact pressure is not transmitted through insulating material of the terminal block.

6.05.08 The terminals, the conductor fixing screws or the external or internal conductors shall not be liable to come into contact with terminal covers.

6.05.09 Two screws shall be provided in each current & potential terminal for effectively clamping the external leads or thimbles.

6.05.10 Each clamping screw shall engage a minimum of three threads in the terminal. The ends of screws shall be such as not to pierce and cut the conductors used.

6.05.11 The minimum internal diameter of terminal hole shall be as per IS: 14697 / 1999 or CBIP Tech Report 325.

6.05.12 The manufacturer shall ensure that the supporting webs between two terminals of the terminal block shall be sufficiently high to ensure that two neighboring terminals do not get bridged by dust and there shall not be any possibility of flash over between adjacent terminals of the terminal block.

6.06 TERMINAL COVER

6.06.01 The termination arrangement shall be provided with an extended transparent terminal cover as per clause number 6.5.2 of IS: 14697 / 1999 (amended upto date) irrespective of rear connections.

6.06.02 The terminal cover shall be made out of same material as that of meter body. The terminal cover shall be unbreakable, high grade, fire resistant Polycarbonate material so as to give it tough and non-breakable qualities. The terminal cover shall be transparent.

6.06.03 The terminal cover shall enclose the actual terminals, the conductor fixing screws and unless otherwise specified, a suitable length of external conductors and their insulation.

6.06.04 The terminal cover shall be provided with one side hinge/two top hinges.

6.06.05 Independent sealing provision shall be made against opening of the terminal cover and meter body cover to prevent unauthorized tampering. It is necessary to provide bidirectional screws with two holes

for sealing purpose of terminal cover. The meter shall be pilfer-proof & tamper-proof.

6.06.06 The fixing screws used on the terminal cover for fixing and sealing in terminal cover shall be held captive in the terminal cover.

6.06.07 Proper size of grooves shall be provided at bottom of this terminal cover for incoming service connections.

6.06.08 When the meter is mounted, no access to the terminals by any means shall be possible without breaking seals(s) of the terminal cover.

6.07 RESISTANCE TO HEAT AND FIRE

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

6.08 The meter shall be completely factory sealed except the terminal block cover.

6.09 The provision shall be made on the meter for at least two seals to be put by utility user.

6.10 A Push button facility shall be provided for high resolution reading / alternate mode of display, as brought out elsewhere in this specification. Facility of scrolling of all the readings up and down in all the display modes shall be provided.

6.11 OUTPUT DEVICES

The meter shall have test output accessible from the front and be capable of being monitored with suitable testing equipment while in operation at site. The operation indicator must be visible from front. The test output device shall be provided in the form of blinking LED. Resolution of the test output device shall be sufficient to enable the starting current test in less than 10 minutes. The pulse rate of output device which is Pulse / kWh and Pulse / kVArh (meter constant) shall be programmed according to primary values of voltage & current & shall be indelibly provided on the nameplate.

6.12 The meter accuracy shall not be affected by external AC / DC / permanent magnetic field as per CBIP Technical Report 325 with latest amendments. If the meter gets affected under influence of any magnetic field (AC / DC / Permanent), then the same shall be recorded as magnetic tamper event with date & time stamping and the meter shall record energy maximum value current (Imax) and reference voltage at unity power factor.

6.13 The meter shall also be capable to withstand and shall not get damaged if phase-to-phase voltage is applied between phases & neutral for five minutes without affecting the accuracy.

6.14 In meter, power supply unit shall be micro control type instead of providing transformer and then conversion to avoid magnetic influence.

6.15 Non specified display parameters in the meter shall be blocked and it shall not be accessible for reprogramming at site. However these parameters shall be programmable at site through representative of meter manufacturer.

6.16 Complete metering system shall not be affected by the external electromagnetic interference such as electrical discharge of cables and capacitors, harmonics, electrostatic discharges, external magnetic fields and DC current in AC supply etc.

6.17 Internal CTs are to be provided with magnetic shielding and they shall be tested separately prior to assembly by the meter manufacturer.

6.18 PCB used in meter shall be made by Surface Mounting Technology.

6.19 REAL TIME INTERNAL CLOCK (RTC)

The real time quartz clock shall be used in the meter for maintaining time (IST) and calendar. The RTC shall be non - rechargeable and 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), Laptop Computer 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'.

The RTC battery & the battery for display in case of power failure shall be separate.

6.20 The meter shall remain immune for the test of electromagnetic HF/RF defined under the test no. 4.0 for EMI/EMC of IS 14697:1999 amended up to date.

6.21 For any higher signals than the present standards and MSEDCL technical specifications indicated above cl. 6.21, the energy meters shall be immune & the accuracy of energy meters shall not get affected.

6.22 The communication of energy meters shall not be affected considering the above feature state in the clause 6.21 & 6.22.

6.23 The meter shall withstand any type of High Voltage and High Frequency surges which are similar to the surges produced by induction coil type instruments without affecting the accuracy of the meter.

The accuracy of the meter shall not be affected with the application of abnormal voltage / frequency generating device such as spark discharge of approximately 35 kV.

The meter shall be tested by feeding the output of this device to meter in any of the following manner for 10 minutes:

(i) On any of the phases or neutral terminals

(ii) On any connecting wires of the meter (Voltage discharge with 0-10 mm spark gap)

(iii)At any place in load circuit.

The accuracy of meter shall be checked before and after the application of above device.

6.24 SELF DIAGNOSTIC FEATURES

6.24.01 The meter shall keep log in its memory for unsatisfactory functioning or non-functioning of Real Time Clock battery, also it shall be recorded and indicated in reading file at base computer software.

6.24.02 All display segments: "LCD Test" display shall be provided for this purpose.

6.25 The watch dog provided shall invariably protect the hanging of microprocessor during such type of tampering devices.

6.26 METER PROTOCOL

The meter protocol shall be as per Annex E - Category C1 meters of IS: 15959 / 2011 amended upto date.

6.27 COMMUNICATION CAPABILITY

The meter shall be provided with two ports for communication of the measured / collected data as per IS: 15959 / 2011, i.e. a hardware port compatible with RS-232 specifications (RJ - 11 / RJ - 45 type is also acceptable) which shall be used for remote access through suitable Pluggable Modem (4G/2G/3G/NB-IoT/PLCC/LPRF) 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. RS-232 port or TCP / IP port as required on terminal block is also acceptable. Sealing arrangement for Optical & RS 232 port or TCP / IP port as required shall be provided.

During data communication process through either AMR or MRI, the meter energy recording should not get affected.

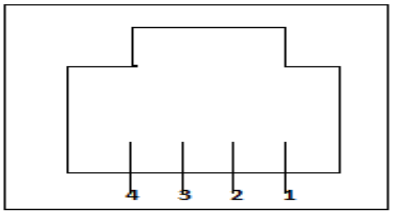
Both ports shall support the default and minimum baud rate of 9600 bps.

Necessary chord for Optical Port of minimum length of 1 metre in the ratio 25:1 shall be provided free of cost.

The minimum requirements for RS-232 based systems are described below:

i. The interface shall meet all the requirements of RS-232 specifications in terms of Physical media, Network topologies, maximum devices, maximum distance, mode of operation, etc.

ii. RJ11 type connectors have to be provided to easily terminate the twisted pair.



PIN DESCRIPTION

Pin No	Signal
1	RTS (Ready To Send)
2	Ground (GND)
3	Transmit Data (Tx)
4	Receive Data (Rx)

6.28 The meter shall have facility to read the default display parameters during Power supply failure. For this purpose an internal battery may be provided.

The internal battery shall be Ni-mh or Li-ion or NI CD maintenance free battery of long life of 10 years. A suitable Push Button arrangement for activation of this battery shall be provided.

6.29 WIRE / CABLE LESS DESIGN

The meter PCB shall be wireless to avoid improper and loose connections/ contacts.

6.30 Meter shall record & display total energy including Harmonic energy.

6.31 Reverse reading lock of main KWh and kVAh reading is to be incorporated with necessary software modification if required additionally.

6.32 The data stored in the meters shall not be lost in the event of power failure. The meter shall have Non Volatile Memory (NVM), which does not need any battery backup. The NVM shall have a minimum retention period of 10 years.

7.00 TOD TIMINGS

There shall be provision for at least 6 (SIX) TOD time zones for energy and demand. The number and timings of these TOD time zones shall be programmable by manufacturer both at site / factory.

At present the time zones shall be programmed as below:

ZONE "A" (TZ1): 0000 Hrs to 0600 Hrs and 2200 Hrs to 2400 Hrs.

ZONE "B" (TZ2): 0600 Hrs to 0900 Hrs and 1200 Hrs to 1800 Hrs.

ZONE "C" (TZ3): 0900 Hrs to 1200 Hrs.

ZONE "D" (TZ4): 1800 Hrs to 2200 Hrs.

8.00 DEMAND INTEGRATION PERIOD

The maximum demand integration period shall be set at 15 minutes with block window method.

9.00 MD RESET

The meter shall have following MD resetting options.

i) Communication driven reset;

ii) Manual resetting arrangement with sealing facility;

iii) Automatic reset on First day of every month at 00.00 Hrs. This option shall be blocked by default and made programmable through hand held terminal / CMRI for the actual date required.

10.00 TAMPER AND FRAUD MONITORING FEATURES

10.01 ANTI TAMPER FEATURES.

The meter shall detect and correctly register energy under following tamper conditions:

(a) The meter accuracy shall not be affected by change of phase sequence. It shall maintain the desired accuracy in case of reversal of phase sequence.

(b) The meter shall continue to work even without neutral.

(c) The meter shall work in absence of any two phases i.e. it shall work

on any one phase wire and neutral, to record relevant energy.

(d) The meter accuracy shall not be affected by external AC / DC / permanent magnetic field as per CBIP Technical Report 325 with latest amendments. If the meter gets affected under influence of any magnetic field (AC / DC / Permanent), then the same shall be recorded as magnetic tamper event with date & time stamping and the meter shall record energy maximum value current (Imax) and reference voltage at unity power factor.

(e) If a consumer tries to steal power by disconnecting the voltage supply of one or two phases of the meter externally or by tampering so that no voltage or partial voltage (< 50% of Vref) is available to voltage circuit of meter & current is flowing in that phase, the meter shall record energy (kVAh & kWh) at Vref, current available in these phases & unity power factor.

(f) The meter shall remain immune for the test of electromagnetic HF/RF defined under the test no. 4.0 for EMI/EMC of IS 14697:1999 amended up to date. For any higher signals than the present standards and MSEDCL technical specifications indicated above, the energy meters shall be immune & the accuracy of energy meter shall not get affected.

The separate slot with 10 no. occurrences of EMI/EMC tamper along with date & time stamp shall be provided.

10.02 TAMPER EVENTS

10.02.01 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. as per relevant IS.

10.02.02 The meter shall record the occurrence and restoration of tamper events of current, voltages, kWh, kVAh power factor, event code, date & time etc. listed in Table 32 to 37 of IS: 15959 / 2011.

10.02.03 In the event the meter is forcibly opened, even by 2 to 4 mm variation of the meter cover, same shall be recorded as tamper event with date & time stamping as per table 37 of IS: 15959 / 2011 and the meter shall continuously display that the cover has been tampered.

10.02.04 The detection of the tamper event shall be registered in the tamper event register. The no. of times the tampering has been done shall also be registered in the meter.

10.02.05 Tamper details shall be retrieved by authorized personnel through either of the following:

i) HHU.

ii) Remote access through suitable communication network.

10.02.06 Minimum 200 numbers of events (occurrences & restoration with date & time) shall be available in the meter memory. The recording of abnormal events shall be on FIFO basis as per IS15959. The unrestored events shall be recorded separately and shall not be deleted till they get recovered (permissible upto 3 months).

All the information of data shall be made available in simple & easy to understand format.

10.03 The threshold values for various tampers are as below.

Sr. No.	**Description**	**Occurrence (With Occ. Time 5 min.)**	**Restoration (With Rest. Time 5 min.)**
1.	PT link Missing (Missing potential)	< 50% of Vref and current in that phase is > 1% Ib	> 50 % of Vref
2.	Over voltage in any phase	> 115 % of Vref	< 115 % of Vref
3.	Low voltage in any phase	< 70 % of Vref	> 70 % of Vref
4.	Voltage Unbalance	Vmax - Vmin > 10 % Vmax	Vmax - Vmin < 10 % Vmax
5.	CT reverse	Change in direction of current	Current flow in forward direction.
6.	CT Open.	Zero Amps in one or two phases and current in at least 1 phase is > 5% Ib for 15 minutes.	> 3 % Ib for 15 min in the tampered phase for 15 min.

7.	Current Unbalance. (Diff. of phase currents)	> 30 % Iref* for 15 min	< 30 % Iref* for 15 min
8.	Current Bypass	Bypass Current > 50 % Iref* for 15 min	Bypass Current < 30 % Iref* for 15 min
9.	Over Current in any Phase	> 120 % I_b	< 120 % I_b
10.	Influence of permanent magnet or AC / DC electromagnet / permanent magnet	Immediate	1 minute after removal
11.	Neutral Disturbance	--	--
12.	Power failure	Immediate	Immediate
13.	Very Low PF	--	--
14.	Meter Cover Opening	(2 to 4 mm) Immediate (Occurance only)	

Q* Higher of 3 phase currents shall be taken as reference for this purpose.

11.00 QUANTITIES TO BE MEASURED & DISPLAYED

The meter shall be capable of measuring and displaying the following electrical quantities within specified accuracy limits for polyphase balanced or unbalanced loads:

a) Instantaneous Parameters such as phase and line voltages, currents, power factors, overall kVA, kW, kVAr, power factor, frequency etc as per details given in the table below and IS: 15959 / 2011.

b) Block Load Profile Parameters such as kVAh, kWh, kVArh (lag), kVArh (lead), Maximum Demand (MD) in kW / kVA / power factor / phase and line voltages / currents etc. as per details given in the table below and IS: 15959 / 2011.

c) Billing Profile Parameters such as cumulative energy kWh / cumulative kVAh / cumulative energy kVArh, etc. as per details given in the table below and IS: 15959 / 2011.

In addition to above the meter shall also record the Name plate details, programmable parameters (readable as profile), occurrence and restoration of tamper events along with the parameters (Table 30, 31 32, 33, 34, 35, 36, 37 & 39 respectively) of IS: 15959 / 2011.

Detail of category wise parameters requirement suitable for HT (CT / PT) consumer metering is given in following tables of IS: 15959 / 2011.

Category C1	Parameter group	Annexure Table No.
HT (CT / PT) consumers Energy Meters	Instantaneous parameters	27
	Block Load Profile parameters	28
	Billing Profile Parameters	29
	Name Plate details	30
	Programmable Parameters	31
	Event Conditions	32 to 37
All logging parameters for each of the event condition for 3 Φ / 4W	Capture parameters for event (Event Log Profile)	39

12.00 DISPLAY OF MEASURED VALUES

12.01 DISPLAY INDICATORS

The supply indication shall be displayed permanently by LCD as a minimum and shall be visible from the front of the meter. In case of non available of voltage to any phase(s), the LCDs of that particular phase shall stop glowing or those particular indicator(s) shall start blinking on the LCD display of meter.

12.02 Permanently backlit LCD panel shall show the relevant information about the parameters to be displayed. The corresponding non-volatile memory shall have a minimum retention time of 10 years.

In the case of multiple values presented by a single display it shall be The meter shall have 6 digits (with +/- indication), parameter identifier, permanently backlit Liquid Crystal Display (LCD) with wide viewing angle. The size of digit shall be minimum 8x5 mm. The decimal units shall not be displayed in auto scroll mode. However it shall be displayed in push button mode or alternate mode for high resolution display for

testing. Auto display cycling push button is required with persistence time of 10 Seconds. LCD shall be suitable for temperature withstand of 70^0 C; adequate back up arrangement for storing of energy registered at the time of power interruption shall be provided.

12.03 The meters shall be pre-programmed for following details.

a) PT Ratio: $\frac{11}{\sqrt{3}}$kV/$\frac{110}{\sqrt{3}}$V

b) CT Ratio: 1/1 Amps or 5/5 Amps as per requirement.

c) MD resetting shall be auto as per clause no. 9.00 (iii).

d) MD Integration Period is 15 Minutes real time based.

e) Average power factor with 3 decimal digits shall be displayed.

f) The array of data to be retained inside the meter memory shall be for the last 32 days for a capture period of 15 minutes. Load survey data shall be first in first out basis (FIFO).

g) The display of various parameters in Normal Mode & Alternate mode shall be as per table 27 & 29 (except 8 & 9) of Annex E of IS: 15959 / 2011 in the sequence as below. Display other than specified below shall be blocked. The scroll period for auto scroll shall be 10 secs.

SN	PARAMETERS
A	**NORMAL DISPLAY (DEFAULT DISPLAY)**
1.	LCD Test
2.	Real Time Clock – Date & Time
3.	Voltage – V_R
4.	Voltage – V_Y
5.	Voltage – V_B
6.	Current – I_R
7.	Current – I_Y
8.	Current – I_B
9.	Cumulative Energy – kWh
10.	Cumulative Energy – kWh - TOD Zone A (TZ1)

11.	Cumulative Energy – kWh - TOD Zone B (TZ2)
12.	Cumulative Energy – kWh - TOD Zone C (TZ3)
13.	Cumulative Energy – kWh - TOD Zone D (TZ4)
14.	Cumulative Energy – kVArh - Lag
15.	Cumulative Energy – kVArh - Lag- TOD Zone A (TZ1)
16.	Cumulative Energy – kVArh - Lag- TOD Zone B (TZ2)
17.	Cumulative Energy – kVArh - Lag- TOD Zone C (TZ3)
18.	Cumulative Energy – kVArh - Lag- TOD Zone D (TZ4)
19.	Cumulative Energy –kVArh - Lead
20.	Cumulative Energy – kVArh - Lead- TOD Zone A (TZ1)
21.	Cumulative Energy – kVArh - Lead- TOD Zone B (TZ2)
22.	Cumulative Energy – kVArh - Lead- TOD Zone C (TZ3)
23.	Cumulative Energy – kVArh - Lead- TOD Zone D (TZ4)
24.	Cumulative Energy – kVAh
25.	Cumulative Energy – kVAh - TOD Zone A (TZ1)
26.	Cumulative Energy – kVAh - TOD Zone B (TZ2)
27.	Cumulative Energy – kVAh - TOD Zone C (TZ3)
28.	Cumulative Energy – kVAh – TOD Zone D (TZ4)
29.	Current MD – kVA with occurance date & time
30.	MD - kVA – TOD Zone A (TZ1) with occurance date & time
31.	MD - kVA – TOD Zone B (TZ2) with occurance date & time
32.	MD - kVA – TOD Zone C (TZ3) with occurance date & time
33.	MD - kVA – TOD Zone D (TZ4) with occurance date & time
34.	Number of MD – kVA reset

35.	Rising MD with elapsed time
36.	Three Phase Power Factor – PF
37.	Cumulative Tamper Count
38.	Meter Cover Opening – Occurance with date and time.
B	**ON DEMAND DISPLAY (ALTERNATE MODE)**
1.	Last date & time of MD - kVA reset
2.	Current – I_R
3.	Current – I_Y
4.	Current – I_B
5.	Voltage – V_R
6.	Voltage – V_Y
7.	Voltage – V_B
8.	Signed Power Factor – R Phase
9.	Signed Power Factor – Y Phase
10.	Signed Power Factor – B Phase
11.	Frequency
12.	High resolution kWh (for calibration)
13.	High resolution kVArh Lag(for calibration)
14.	High resolution kVArh Lead(for calibration)
15.	High resolution kVAh (for calibration)
16.	Running Demand kVA (for calibration)
17.	M1 MD - kVA – TOD Zone A (TZ1) with occurance date & time
18.	M1 MD - kVA – TOD Zone B (TZ2) with occurance date & time
19.	M1 MD - kVA – TOD Zone C (TZ3) with occurance date & time

20.	M1 MD - kVA – TOD Zone D (TZ4) with occurance date & time
21.	M2 MD - kVA – TOD Zone A (TZ1) with occurance date & time
22.	M2 MD - kVA – TOD Zone B (TZ2) with occurance date & time
23.	M2 MD - kVA – TOD Zone C (TZ3) with occurance date & time
24.	M2 MD - kVA – TOD Zone D (TZ4) with occurance date & time
25.	Last Tamper Event with date and time.

h) Other KVA MD values shall be available in reset backup data for 12 months.

i) The meter display shall return to Default Display mode (mentioned above) if the 'Push button' is not operated for 15 seconds.

13.00 BILLING DATA, BILLING HISTORY & BLOCK LOAD SURVEY

13.01 BILLING DATA

The billing data shall be as per table 29 of Annex E of IS: 15959 / 2011 for category C1 and is summarised as below.

Sr. No.	Parameters
1.	Billing Date
2.	System Power Factor for Billing Period
3.	Cumulative Energy – kWh
4.	Cumulative Energy – kWh - TOD Zone A (TZ1)
5.	Cumulative Energy – kWh - TOD Zone B (TZ2)
6.	Cumulative Energy – kWh - TOD Zone C (TZ3)
7.	Cumulative Energy – kWh - TOD Zone D (TZ4)
8.	Cumulative Energy – kVArh – Lag
9.	Cumulative Energy – kVArh - Lag- TOD Zone A (TZ1)
10.	Cumulative Energy – kVArh - Lag- TOD Zone B (TZ2)
11.	Cumulative Energy – kVArh - Lag- TOD Zone C (TZ3)

12.	Cumulative Energy – kVArh - Lag- TOD Zone D (TZ4)
13.	Cumulative Energy – kVArh – Lead
14.	Cumulative Energy – kVArh - Lead- TOD Zone A (TZ1)
15.	Cumulative Energy – kVArh - Lead- TOD Zone B (TZ2)
16.	Cumulative Energy – kVArh - Lead- TOD Zone C (TZ3)
17.	Cumulative Energy – kVArh - Lead- TOD Zone D (TZ4)
18.	Cumulative Energy – kVAh
19.	Cumulative Energy – kVAh - TOD Zone A (TZ1)
20.	Cumulative Energy – kVAh – TOD Zone B (TZ2)
21.	Cumulative Energy – kVAh – TOD Zone C (TZ3)
22.	Cumulative Energy – kVAh – TOD Zone D (TZ4)
23.	MD – kVA with occurance date & time
24.	MD – kVA – TOD Zone A (TZ1) with occurance date & time
25.	MD – kVA – TOD Zone B (TZ2) with occurance date & time
26.	MD – kVA – TOD Zone C (TZ3) with occurance date & time
27.	MD – kVA – TOD Zone D (TZ4) with occurance date & time
28.	MD – kW occurance date & time
29.	MD – kW – TOD Zone A (TZ1) with occurance date & time
30.	MD – kW – TOD Zone B (TZ2) with occurance date & time
31.	MD – kW – TOD Zone C (TZ3) with occurance date & time
32.	MD – kW – TOD Zone D (TZ4) with occurance date & time

13.02 BILLING HISTORY

The meter shall have sufficient non-volatile memory for recording history of billing parameters for last 12 months.

13.03 BLOCK LOAD SURVEY

The Block Load survey data shall be logged on non time based basis, i.e. if there is no power for more than 24 hours the day shall not be recorded, however if there is no power for few block within one day those block should be displayed with 0 values with marking of power fail indication for that block i.e. for every day when there was power on, the meter must record 48 blocks. Whenever meter is taken out and brought to laboratory, the load survey data shall be retained for the period of actual use of meter. This load survey data can be retrieved as and when desired and load profiles shall be viewed graphically / analytically with the help of meter application software. The meter application software shall be capable of exporting / transmitting these data for analysis to other user software in spreadsheet (excel) format.

The Block Load survey data shall be for specified parameters as per table 28 (except 8 & 9) for 3Φ/4W system of measurement with NEUTRAL as reference point of Annex E of IS: 15959 / 2011. The specified parameters are as below.

Sr. No.	**Parameters**
1.	Real Time Clock – Date and Time
2.	Current - I_R
3.	Current – I_Y
4.	Current – I_B
5.	Voltage – V_{RN}
6.	Voltage – V_{YN}
7.	Voltage – V_{BN}
8.	Block Energy – kWh
9.	Block Energy – kVArh – Lag
10.	Block Energy – kVArh – Lead
11.	Block Energy – kVAh

14.00 DEMONSTRATION

The purchaser reserves the right to ask to give the demonstration of the equipment offered at the purchaser's place.

15.00 PERFORMANCE UNDER INFLUENCE QUANTITIES

The meters performance under influence quantities shall be governed by IS: 14697 / 1999 (amended upto date) and CBIP Tech. Report 325. The accuracy of meter shall not exceed the permissible limits of accuracy as per standard IS: 14697 / 1999 (amended upto date). In case of conflict, the priority shall be as per clause no. 5.00 of this specification.

16.00 HAND HELD UNIT (HHU)

16.01 To enable local reading of meters data, a DLMS compliant HHU shall be provided.

16.02 The HHU shall be as per specification given in Annex J of IS: 15959 / 2011.

16.03 It shall be compatible to the DLMS compliant energy meters that are to be procured / supplied on the basis of this specification.

16.04 The HHU shall be supplied by the meter manufacturer along with the meter free of cost in the ratio of one for each 250 Nos. meters supplied including user manual and a set of direct communication cords for data downloading to the Laptop or PC for each HHU and communication cord for downloading data from optical port to HHU shall be provided.

16.05 There shall be a provision for auto power save on HHU, which shall force the instrument in the power saving mode in case of no-activity within 5 minutes. The data shall not be lost in the event the batteries are drained or removed from the HHU.

16.06 The HHU shall have a memory capacity of 512 MB SRAM (Static RAM) with battery backup & upgradeable and BIOS / OS on FLASH / EEPROM Memory of 256 KB (RAM-512 MB, FLASH-2GB, SD Card- 8GB with USB facility.

16.07 The manufacturer / supplier shall modify the compatibility of HHU with the meter and the base computer system due to any change in language or any other reasons at their own cost within guarantee period.

16.08 The HHU shall be type tested for (a) Tests of Mechanical requirement such as Free fall test, Shock Test, Vibration test, (b) Tests of Climatic influences such as Tests of Protection against Penetration of Dust and Water (IP 6X), Dry Heat test, Cold Test, Damp Heat Cyclic Test, (c) Tests

for Electromagnetic Compatibility (EMC), (d) Test of Immunity to Electromagnetic HF Fields and (e) Radio Interference Measurement.

16.09 The equipments offered shall be fully type tested at approved laboratory by National Accreditation Board for Testing and Calibration Laboratories (NABL) as per relevant standards within last 5 years from the date of opening of tender & the type test reports shall be enclosed with the offer.

17.00 COMPUTER SOFTWARE.

17.01 For efficient and speedy recovery of data downloaded through HHU on base computer, licensed copies of base computer software shall have to be supplied free of cost. This software will be used at number of places up to Division level. As many copies of base computer software as required up to Division level shall be provided by Supplier.

17.02 The meter shall be capable to communicate directly with laptop computer. Base Computer Software shall be suitable for all types of printers such as dot matrix, inkjet, deskjet and laser printers.

17.03 The Base Computer Software shall be "Windows" based & user friendly.The data transfer shall be highly reliable and fraud proof (No editing shall be possible on base computer as well as HHU by any means). The software shall have capability to convert all the data into ASCII format/XML format as per MIOS.

17.04 The Base Computer Software should be password protected.

17.05 The total time taken for downloading Billing, Tamper and Load Survey Data for 32 days shall be less than or equal to 9 minutes.

17.06 Downloading time of only Billing data shall be less than or equal to 20 secs.

17.07 The BCS software shall create one single file for the uploaded data, e.g. if CMRI contains the meter readings of, say, 2,000 consumer meters and the said data is uploaded to BCS, then the BCS shall create a single file containing separate records for each consumer meter reading in ASCII format or XML file as per MIOS for individual meter reading.

17.08 Meter manufacturers should also need to submit Convert API (API3) as per MIOS universal standard along with Base Computer System free of cost. This API should capable of converting both data i.e. AMR data collected from Read API (API1) and MRI data collected from CMRI.

17.09 Also there shall be a provision to give filenames while creating the file.

17.10 As and when the meter manufacturer releases new or latest or advanced versions of meter hardware / firmware / software (such as

Base Computer System, API3 etc), the same shall be made available to purchaser immediately on the release date free of cost. The latest version shall support all existing hardware / meters in the field. The meter manufacturer should also provide support for changes and integration of Base Computer System and API3

17.11 The meter samples shall be tested by our IT Department for the time required for downloading the data as per specifications and as confirmed by the bidder.

17.12 Downloading software shall also be provided so as to install on our Laptop for downloading data directly on Laptop from meter without the use of HHU.

17.13 The software provided on laptop or PC shall be compatible to read the data from USB drive and for that purpose a sample cable (1 No.) shall be provided with USB termination. USB being the de-facto standard, this is the requirement.

17.14 MSEDCL is procuring large quantity of meters. As such manufacturer have to depute Hardware Engineers and Software Engineers on call basis, who shall have thorough knowledge of meter hardware / software used for downloading and converting so as to discuss the problems, if any, or new development in the hardware / software with Chief Engineer, Testing & Quality Control Cell / Chief General Manager (IT), MSEDCL, Prakashgad, Bandra (E), Mumbai – 400051 without any additional charge.

18.00 CONNECTION DIAGRAM AND TERMINAL MARKINGS

The connection diagram of the meter shall be clearly shown on inside portion of the terminal cover and shall be of permanent nature. Meter terminals shall also be marked and this marking shall appear in the above diagram. The diagram & terminal marking on sticker shall not be allowed.

19.00 NAME PLATE AND MARKING OF METERS

Meter shall have a name plate clearly visible, effectively secured against removal and indelibly and distinctly marked with all essential particulars as per relevant standards. Meter Serial Number shall be Bar Coded along with numeric number. The size of bar coded number shall not be less than 35x5 mm. The manufacturer's meter constant shall be marked on the name plate. Meter serial number & bar code on sticker will not be allowed.

The meter shall also store name plate details as given in the table 30 of Annex F of IS: 15959 / 2011. These shall be readable as a profile as

and when required.

In addition to the requirement as per IS, following shall be marked on the name plate.

(i) Purchase order no. & date

(ii) Month and Year of manufacture

(iii) Name of purchaser, i.e. MSEDCL

(iv) Guarantee Five Years

(v) ISI mark

(vi) Category of Meter: **Category C1 – HT (PT / CT) Consumer Meter**. The lettering shall be bold in 3 mm font.

20.00 TESTS

20.01 TYPE TESTS

The meter offered shall have successfully passed all the type tests described in IS: 14697 / 1999 (amended upto date), external AC / DC / permanent magnetic influence tests as per CBIP Tech Report 325 with latest amendments and this specification and the meter Data Transfer and Communication capability as per IS: 15959 / 2011.

The type test reports shall clearly indicate the constructional features of the type tested meter. Separate type test reports for each offered type of meter shall be submitted.

The type test certificates as per IS: 14697 / 1999 (amended upto date) shall be submitted along with the offer. The type test certificate carried out during last three years from the date of opening the tender shall be valid. The Type test certificate of metering protocol as per IS: 15959 / 2011 amended upto date shall be submitted alongwith the offer and the same shall not be more than 36 months old at the time of submission.

All the type test reports shall be got approved from the Chief Engineer, MSEDCL, Testing & Quality Control Cell, Prakashgad, Mumbai.

All the Type Tests specified in the technical specifications shall be carried out at laboratories which are accredited by the National Board of Testing and Calibration Laboratories (NABL) of Govt. of India such as ERDA, ERTL, CPRI, etc. Type Test Reports conducted in manufacturers own laboratory and certified by testing institute shall not be acceptable.

Further Purchaser shall reserve the right to pick up energy meters at random from the lots offered and get the meter tested at third party lab i.e. CPRI / agencies listed at Appendix - C of Latest – standardization of AC static electrical energy meters – CBIP publication No. 325 / NPL /

CQAL / ERTL / ERDA at the sole discretion of the purchaser at the purchaser's cost. The supplier shall have no right to contest the test results of the third party lab or for additional test and has to replace / take corrective action at the cost of the supplier. For this purpose, the tenderer shall quote unit rates for carrying out each type test. However, such unit rates will not be considered for evaluation of the offer.

Make & type of major components used in the type-tested meter shall be indicated in the QAP.

20.02 ACCEPTANCE TESTS

Criteria for selection for such tests and performance requirements shall be as per IS: 14697 / 1999 (reaffirmed 2004).

ALL acceptance tests as per IS: 14697 / 1999 shall be carried out on the meter.

All acceptance tests as per IS: 11731 (Part-2)/ 1986 shall be carried out on the meter body, heat deflection test as per ISO:75, glow wire test as per the IS:11000 (part 2/SEC-1) 1984 OR IEC PUB 60695-2-12, Ball pressure test as per IEC--60695-10-2 and Flammability Test as per UL 94 or as per IS: 11731 (Part-2)/ 1986.

20.03 ROUTINE TESTS

All routine tests as per IS: 14697 / 1999 shall be carried out on all the meters.

20.04 ADDITIONAL ACCEPTANCE TESTS

The following additional tests shall be carried out in addition to the acceptance tests specified in IS: 14697 / 1999 (amended up to date)

(a) **TRANSPORTATION TEST**

At least 50% of the samples of the meters be tested for error at I_{max}, I_b and 5% I_b at unity power factor and 50% I_{max} and 10% I_b at 0.5 lagging Power Factor besides checking them for starting current. This test shall be conducted on ready to install meter i.e. meter cover ultrasonically welded & sealed. After recording these errors, the meters be put in their normal packing and transported for at least 50 km in any transport vehicle such as pick up van, Jeep, etc. on uneven rural roads and then re-tested at all these loads after the transportation. The variation in errors recorded before and after transportation shall not exceed 1% at higher loads and 1.5% at loads below Ib.

(b) **OTHER ACCEPTANCE TESTS**

i) Meters shall be tested for tamper conditions as stated in this specification.

ii) Glow wire testing for poly-carbonate body.

iii) Power consumption tests shall be carried out.

iv) The meter shall comply all the tests for external AC / DC magnetic field as per CBIP Tech Report 325 with latest amendments. Moreover, the magnetic influence test for permanent magnet of 0.5 T for minimum period of 15 minutes shall be carried out by putting the magnet on the meter body. If, during the test, the accuracy of the meter gets affected, then the same shall be recorded as magnetic tamper event with date & time stamping and the meter shall record energy considering Imax and reference voltage at unity power factor in all the three phases. After removal of magnet, meter shall be subjected to accuracy test as per IS: 14697 / 1999 (amended upto date). No deviation in error is allowed in the class index as per IS: 14697 / 1999 (amended upto date) & this specification.

v) The meter shall withstand impulse voltage at 10 kV.

vi) The meter shall remain immune for the test of electromagnetic HF/RF defined under the test no. 4.0 for EMI/EMC of IS 14697:1999 amended up to date.

Jammer test for sample meters shall be carried out at MSEDCL's Testing Division.

The tests 20.04 (b) (i) to (iii) shall be carried out at factory for each inspected lot at the time of pre dispatch inspection.

The tests 20.04 (b) (iv) to (vi) shall be carried out on one sample from first lot as per procedure laid down in IS: 14697 / 1999 (amended up to date), CBIP Tech Report 325 (with latest amendments) at Third party NABL Accredited lab . The test report shall be got approved from Chief Engineer, Testing & Quality Control Cell before commencement of supply.

(i) For influence quantities like, voltage variation, frequency variation, voltage unbalance etc. the limits of variation in percentage error shall be as per IS: 14697 / 1999 (amended up to date).

21.00 GUARANTEED TECHNICAL PARTICULARS

The tenderer shall furnish the particulars giving specific required details of meters in schedule 'A' attached. The offers without the details in Schedule 'A' stand rejected.

22.00 PRE-DESPATCH INSPECTIONS

All Acceptance tests and inspection shall be carried out at the place of manufacturer unless otherwise specially agreed upon by the manufacturer and purchaser at the time of purchases. The manufacturer shall offer to the inspector representing the purchaser all the reasonable facilities, free of charge, for inspection and testing, to satisfy him that the material is being supplied in accordance with this specification.

The MSEDCL's representative / Engineer attending the above testing will carry out testing as per IS: 14697 / 1999 & this specification and issue test certificate approval to the manufacturer and give clearance for dispatch.

The first lot of meter may be jointly inspected by the Executive Engineer, Testing Division & the Executive Engineer, Inspection Wing.

23.00 JOINT INSPECTION AFTER RECEIPT AT STORES (Random Sample Testing)

From each lot (lot means the total number of meters received in a Store out of inspected and approved lot by E.E.(IW) or purchaser's representative under one approval letter) of meters received at Stores, 5 sample meters shall be drawn (meters received in damage condition shall not be selected as samples) and these meters will be tested by our Testing Engineer in presence of Supplier's representative jointly for (i) no load condition test, (ii) limits of error test (iii) starting current test, (iv) repeatability of error test (v) tamper conditions and (vi) data downloading time as per this specification.

The 5 days advance intimation will be given to the supplier and if the suppliers fail to attend the joint inspection on the date informed, the Testing will be carried out by our Testing Engineer in absence of supplier's representative. If the meters failed in above random sample testing, the lot will be rejected.

24.00 GUARANTEE

The meter & HHU supplied shall be guaranteed for a period of 66 months from the date of supply or 60 months from the date of commissioning, whichever is earlier. Bidders shall guarantee to replace free of cost the meters which are found defective / inoperative at the

time of installation, or become inoperative / defective during guarantee period. Replacements shall be effected within one month from the date of intimation. If the defective meters are not replaced within the specified period above, MSEDCL shall recover an equivalent amount plus 15% supervision charges from any of the bills of the supplier.

25.00 PACKING

25.01 The meters & HHUs shall be suitably packed in order to avoid damage or disturbance during transit or handling. Each meter & HHU may be suitably packed in the first instance to prevent ingress of moisture and dust and then placed in a cushioned carton of a suitable material to prevent damage due to shocks during transit. The lid of the carton may be suitably sealed. A suitable number of sealed cartons may be packed in a case of adequate strength with extra cushioning, if considered necessary. The cases may then be properly sealed against accidental opening in transit. The packing cases may be marked to indicate the fragile nature of the contents.

25.02 The following information shall be furnished with the consignment:

- Name of the consignee
- Details of consignment
- Destination
- Total weight of the consignment
- Sign showing upper / lower side of the crate
- Sign showing fragility of the material
- Handling and unpacking instructions
- Bill of Materials indicating contents of each package & spare material.

26.00 TENDER SAMPLE

Tenderer are required to submit 15 (Fifteen) nos. of sample meters and 1 (One) no. of sample HHU of offered type / item as per technical specifications from any one of the factories on or before the time & date stipulated for submission of offer for testing the sample meters in third party NABL Lab like ERDA, CPRI, CIPET, ERTL, etc. The offer of those eligible bidders shall only be considered if the sample passes the tests at NABL Lab. The results of NABL Lab shall not be disputed and same shall be binding on the bidder. The required information such as Manufacturer's Name or Trade Name, Sr. No., ISI Certification No., etc. shall be on stickers to be affixed on outer portion of sample meters

being submitted along with the offer. Such information shall not be embossed or printed on any part of the sample meter.

Out of these, two samples shall be without Ultrasonic welding to confirm constructional features.

27.00 QUALITY CONTROL

The purchaser shall send a team of experienced engineers for assessing the capability of the firm for manufacturing of meters as per this specification. The team should be given all assistance and co-operation for inspection and testing at the bidder's works.3 tender samples should be kept ready for assessing and testing. The tenderer has to give all facilities for carrying out the testing of these samples.

28.00 MINIMUM TESTING FACILITIES

28.01 Manufacturer shall posses fully computerized Meter Test Bench System for carrying out routine and acceptance Tests as per IS: 14697 / 1999 (amended up to date). In addition, this facility shall produce Test Reports for each and every meter. The bidder shall have fully automatic Test Bench having in-built constant voltage, current and frequency source with facility to select various loads automatically and print the errors directly. The list of testing equipments shall be enclosed. The manufacturer shall have the necessary minimum testing facilities for carrying out the following tests:

Sr. No.	Name of Test
(1)	A.C. Voltage test
(2)	Insulation Resistance Test
(3)	Test of Accuracy Requirement
(4)	Test on limits of errors
(5)	Test on meter constant
(6)	Test of starting condition
(7)	Test of no-load condition
(8)	Repeatability of error test
(9)	Test of power Consumption
(10)	Vibration test
(11)	Shock Test

(12)	Transportation Test - as per MSEDCL specification
(13)	Tamper conditions - as per MSEDCL specification
(14)	Glow Wire Test
(15)	Long duration test
(16)	Flammability Test
(17)	The manufacturer shall have duly calibrated RSS meter of class 0.01 accuracy

28.02 METER SOFTWARE

The Bidders will have to get appraised & obtain CMMI – Level III within one year from date of letter of award.

28.03 Notwithstanding anything stated herein under, the Purchaser reserves the right to assess the capacity and capability of the bidder to execute the work, shall the circumstances warrant such assessment in the overall interest of the Purchaser.

29.00 MANUFACTURING PROCESS, ASSEMBLY, TESTING

29.01 Meters shall be manufactured using latest and 'state of the art' technology and methods prevalent in electronics industry. The meter shall be made from high accuracy and reliable surface mount technology (SMT) components. All inward flow of major components and sub assembly parts (CT, PT, RTCs / Crystal, LCDs, LEDs, power circuit electronic components, etc.) shall have batch and source identification. Multilayer 'PCB' assembly with 'PTH' (Plated through Hole) using surface mounted component shall have adequate track clearance for power circuits. SMT component shall be assembled using automatic 'pick-and-place' machines, Reflow Soldering oven, for stabilized setting of the components on 'PCB'. For soldered PCBs, cleaning and washing of cards, after wave soldering process is to be carried out as a standard practice. Assembly line of the manufacturing system shall have provision for testing of sub-assembled cards. Manual placing of components and soldering, to be minimized to items, which cannot be handled by automatic machine. Handling of 'PCB' with ICs / C-MOS components, to be restricted to bare minimum and precautions to prevent 'ESD' failure to be provided. Complete assembled and soldered PCB shall undergo functional testing using computerized Automatic Test Equipment.

Test points shall be provided to check the performance of each block / stage of the meter circuitry. RTC shall be synchronized with NPL time at

the time of manufacture. Meters testing at intermediate and final stage shall be carried out with testing instruments, duly calibrated with reference standard, with traceability of source and date.

The manufacturer shall submit the list of plant and machinery along with the offer.

29.02 MANUFACTURING ACTIVITIES

Quality shall be ensured at the following stages:

(a) At PCB manufacturing stage each board shall be subjected to computerized bare board testing.

(b) At insertion stage all components should under go computerized testing for conforming to design parameters and orientation.

(c) Complete assembled and soldered PCB should under go functional testing using Automatic Test Equipments (ATEs)

(d) Prior to final testing and calibration, all meters shall be subjected to ageing test (i.e. Meters shall be kept in ovens for 72 hours at 55^0C temperature and atmospheric humidity under real life condition at it's full load current. After 72 hours meters shall work satisfactory to eliminate infant mortality.

(e) The calibration of meters shall be done in-house.

(f) The bidders shall submit the list of all imported & indigenous components separately used in meter along with the offer.

(g) Bought out items: A detailed list of bought out items which are used in the manufacture of the meter shall be furnished indicating the name of firms from whom these items are procured. The bidder shall also give the details of quality assurance procedures followed by him in respect of the bought out items.

(h) List of Plant and Machinery:

Sr. No.	List of Plant and Machinery used for Energy meter Production	
1	Fully automatic testing Bench with ICT for testing link less meters	Routine Testing and Calibration of Meters
2	Semi automatic testing Bench with MSVT	Routine Testing and Calibration of Meters
3	IR Tester	Insulation testing

4	HV Tester	Insulation testing
5	Error calculators	Error testing
6	Long duration Running test set ups	Reliability Testing
7	Reference Meters Class 0.1 accuracy	Error calculation
8	Ultrasonic welding Machines	Welding of meters
9	Automatic Pick and Place Machines	Automatic placing of SMT components
10	Solder Paste Printing Machine	SMT soldering
11	Soldering Furnace IR reflow	SMT soldering
12	PCB Scanner	For testing of PCBs
13	ATE functional tester	For testing of Components
14	Programmers and Program Loaders	Chip Programming Tools
15	CAD PCB designing setups	PCB designing
16	Furnace IR type for Hybrid Micro Circuits	resistance network and HMC manufacturing
17	Laser Trimming Machines	trimming of resistances for higher accuracy measurement
18	Wave Soldering Machines	Wave soldering of PCBs
19	Humidity Chamber	Accelerated testing for Life cycle
20	Dry Heat Test Chamber	Accelerated testing for Life cycle
21	Thermal Shock Chamber	Accelerated testing for Life cycle
22	PRO - E Mechanical Design Stations	Mechanical CAD stations
23	Spark Erosion Tool fabricating Machine	Tool fabrication and Die manufacturing
24	CNC wire Cut Tool Fabrication machine	Tool fabrication and Die manufacturing
25	CNC Milling Machine for	Tool fabrication and Die

	composite tool fabrication	manufacturing
26	Injection Moulding Machine	Moulding of plastic parts
27	Vibration testing Machine	Vibration testing of Meters
28	Glow Wire Test machine	Testing of Plastic Material
29	Fast transient burst testing setup	Type testing of Meters
30	Short term over Current testing setup	Type testing of Meters
31	Magnetic and other tamper testing setups	Tamper Testing
32	Impulse Voltage Testing Setup	Type testing of Meters
33	Composite Environmental testing chambers	Type testing of Meters

30.00 QUALITY ASSURANCE PLAN

30.01 The tenderer shall invariably furnish QAP as specified in Annexure I along with his offer. The QAP shall be adopted by him in the process of manufacturing.

30.02 Precautions taken for ensuring usage of quality raw material and sub component shall be stated in QAP.

31.00 COMPONENT SPECIFICATION.

As per Annexure II enclosed.

32.00 SCHEDULES.

The tenderer shall fill in the following schedules, which are part and partial of the tender specification and offer. If the schedules are not submitted duly filled in with the offer, the offer shall be liable for rejection.

Schedule 'A' ... Guaranteed and technical particulars. (As per GTP uploaded on e -tendering site)

The discrepancies if any between the specification and the catalogs and / or literatures submitted as part of the offer by the bidders, the same shall not be considered and representations in this regard shall not be entertained. If it is observed that there are deviations in the offer in Guaranteed Technical Particulars, then, such deviations shall be treated as deviations.

ANNEXURE I

QUALITY ASSURANCE PLAN

A) The bidder shall invariably furnish the following information along with his bid, failing which his bid shall be liable for rejection. Information shall be separately given for individual type of material offered.

i) Statement giving list of important raw materials, names of sub-suppliers for the raw materials, list of standards according to which the raw materials are tested. List of test normally carried out on raw materials in presence of Bidder's representative, copies of test certificates:

ii) Information and copies of test certificates as in (i) above in respect of bought out accessories.

iii) List of manufacturing facilities available.

iv) Level of automation achieved and list of areas where manual processing exists.

v) List of areas in manufacturing process, where stage inspections are normally carried out for quality control and details of such tests and inspections.

vi) List of testing equipment available with the bidder for final testing of equipment specified and test plan limitation. If any, vis-a-vis the type, special acceptance and routine tests specified in the relevant standards. These limitations shall be very clearly bought out in schedule of deviation from specified test requirements.

B) The successful bidder shall within 30 days of placement of order, submit following information to the purchaser.

i) List of raw materials as well as bought out accessories and the names of sub-suppliers selected from those furnished along with offers.

ii) Type test certificates of the raw materials and bought out accessories if required by the purchaser.

iii) Quality assurance plan (QAP) with hold points for purchaser's inspection.

The quality assurance plan and purchasers hold points shall be discussed between the purchaser and bidder before the QAP is finalized.

C) The contractor shall operate systems which implement the following:

i) Hold point: A stage in the material procurement or workmanship process beyond which work shall not proceed without the documental approval of designated individuals organizations. The purchaser's written approval is required to authorise work to progress beyond the hold points indicated in quality assurance plans.

ii) Notification point: A stage in the material procurement or workmanship process for which advance notice of the activity is required to facilitate witness. If the purchaser does not attend after receiving documented notification in accordance with the agreed procedures and with the correct period of notice then work may proceed.

D) The successful bidder shall submit the routine test certificates of bought out accessories and central excise passes for raw material at the time of routine testing if required by the purchaser and ensure that Quality Assurance program of the contractor shall consist of the quality systems and quality plans with the following details.

i) The structure of the organization.

- The duties and responsibilities assigned to staff ensuring quality of work.
- The system for purchasing taking delivery and verification of material.
- The system for ensuring quality workmanship.
- The system for retention of records.
- The arrangements for contractor's internal auditing.

A list of administration and work procedures required to achieve and verify contract's quality requirements these procedures shall be made readily available to the project manager for inspection on request.

ii) Quality Plans:

- An outline of the proposed work and programme sequence. The structure of the contractor's organization for the contract.
- The duties and responsibilities assigned to staff ensuring quality of work.
- Hold and notification points.
- Submission of engineering documents required by the specification.
- The inspection of materials and components on receipt. Reference to the contractor's work procedures appropriate to each activity.
- Inspection during fabrication/ construction.
- Final inspection and test.

ANNEXURE II

COMPONENT SPECIFICATION

The make/grade and the range of the components should be from the following list makes or equivalent reputed makes

Sr. No.	Component function	Requirement	Makes and Origin
1	Current Transformers	The Meters shall be with the current transformers as measuring elements.	The current transformer shall withstand for the clauses under 5 & 9 of IS: 14697 / 1999
2	Measurement or computing chips	The measurement or computing chips used in the Meter shall be with the Surface mount type along with the ASICs.	**USA:** Analog Devices, Cyrus Logic, Atmel, Philips, Teridian. Dallas, ST, Texas Instruments, Motorola, Maxim, National Semiconductors, Freescale, Onsemiconductors **Germany:** Siemens. **South Africa:** SAMES. **Japan:** NEC, Toshiba, Renasas, Hitachi. **Austria:** AMS **Holland:** Philips (N X P) **Taiwan:** Prolific
3	Memory chips	The memory chips shall not be affected by external parameters like sparking, high voltage spikes or electrostatic discharges. There shall be security isolation between metering circuit, communication circuit, and power circuit.	**USA:** Atmel, Teridian, Philips ST, National Semiconductors, Texas Instruments, Microchip, Spanson (Fujitsu), Ramtron. **Japan:** Hitachi, Renasas.

			Germany: Siemens
4	Display modules	a) The display modules shall be well protected from the external UV radiations. b) The display visibility shall be sufficient to read the Meter mounted at height of 0.5 meter as well as at the height of 2 meters. c) The construction of the modules shall be such that the displayed quantity shall not disturbed with the life of display (PIN Type). d) It shall be trans-reflective HTN (Hyper Twisted Nematic (120°)) or STN (Super Twisted Nematic (160°)) type industrial grade with extended temperature range.	Display TEK/KCE/RCL Display /Suzhou heng Xiamen instruments/ Veritronics **Singapore:** E-smart, Bonafied Technologies, Display Tech, **Korea:** Advantek, Jebon, Union Display Inc., **Japan:** Hitachi, Tianma, Sony, L&G, Holtek, Haijing. **Malaysia:** Crystal Clear Technology. **Hong kong:** Genda **China:** Success, Tianma
5	Communication Modules	Communication modules shall be compatible for the two ports (one optical port for communication with meter reading instruments & the other hardwired RS 232 port to communicate with various modems for AMR)	**USA:** HP, Optonica, National Semiconductors, **Holland/Korea:** Phillips **Japan:** Hitachi **Taiwan:** Ligitek
6	Optical port	Optical port shall be used to transfer the meter data to meter reading instrument. The mechanical construction of the port shall be such to facilitate the data transfer easily.	**USA:** HP, National Semiconductors, Maxim **Holland/Korea:** Phillips **Japan:** Hitachi **Taiwan:** Ligitek

7	Power supply	The power supply shall be with the Capabilities as per the relevant standards. The power supply unit of the meter shall not be affected in case the maximum voltage of the system appears to the terminals due to faults or due to wrong connections	SMPS Type
8	Electronic components	The active & passive components shall be of the surface mount type & are to be handled & soldered by the state of art assembly processes.	**USA:** National Semiconductors, Atmel, Philips, Texas Instruments, BC Component Analog devices, ST, Maxim, Siemens, PHYCOMP, YAGEO, DRALORIC, KOA, WELWYN, OSRAM, Kemet Onsemiconductors, Freescale, Intersil, Raltron, Fairchild, Muruta, Agilent, AVX, Abracon, Sipex, Diode Inc., Honeywell, Power Integration, Fox, Roham **Japan:** Hitachi, Oki, AVZ or Ricon, Toshiba, Epson, Kemet, Alps, Muruta, TDK, Sanyo, Samsung, Panasonic **India:** Keltron, Incap, VEPL, PEC, RMC, Gujarat Polyavx, Prismatic, MFR Electronic components Pvt. Ltd., Cermet, CTR. **Korea:** Samsung **Germany:** Vishay,

			Epcos, Diotech, Kemet, Infineon **Taiwan:** Yageo.
9	Mechanical parts	(i) The internal electrical components shall be of electrolytic copper & shall be protected from corrosion, rust etc. (ii) The other mechanical components shall be protected from rust, corrosion etc. by suitable plating / painting methods.	
10	Battery	Chargeable maintenance free guaranteed life of 10 years.	**USA:** Maxell, Renata **Japan:** Panasonic, Sony, Mitsubishi, Sanyo **Germany:** Varta, Tedirum **France:** Saft **Korea:** Tekcell, Vitzrocell
11	RTC & Micro controller.	The accuracy of RTC shall be as per relevant IEC / IS standards.	**USA:** Philips, Dallas Atmel, Motorola, Microchip, Epson, ST, Teridian **Japan:** NEC or Oki.
12	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm.	

ANNEXURE – III

MSEDCL DEFINED OBIS CODES FOR PARAMETERS NOT PRESENT IN IS 15959/2011

NO.	PARAMETERS	OBIS Code						Interface Class No./ Attribute
		A	B	C	D	E	F	
1.	Cumulative Energy – kVArh - Lag- TOD Zone A (TZ1)	1	0	5	8	1	255	3/2
2.	Cumulative Energy – kVArh - Lag- TOD Zone B (TZ2)	1	0	5	8	2	255	3/2
3.	Cumulative Energy – kVArh - Lag- TOD Zone C (TZ3)	1	0	5	8	3	255	3/2
4.	Cumulative Energy – kVArh - Lag- TOD Zone D (TZ4)	1	0	5	8	4	255	3/2
5.	Cumulative Energy – kVArh - Lead- TOD Zone A (TZ1)	1	0	8	8	1	255	3/2
6.	Cumulative Energy – kVArh - Lead- TOD Zone B (TZ2)	1	0	8	8	2	255	3/2
7.	Cumulative Energy – kVArh - Lead- TOD Zone C (TZ3)	1	0	8	8	3	255	3/2
8.	Cumulative Energy – kVArh - Lead- TOD Zone D (TZ4)	1	0	8	8	4	255	3/2

SCHEDULE 'A'

GUARANTEED TECHNICAL PARTICULARS (TO BE FILLED ONLINE)

ITEM NAME	**THREE PHASE FOUR WIRE CT / PT OPERATED 5 AMPS OR 1 AMPS FULLY STATIC AMR COMPATIBLE TOD TRI - VECTOR ENERGY METERS AS PER CATEGORY "C1" OF ICS FOR USE ON HT CONSUMER INSTALLATIONS**	
SR. NO.	**GTP PARAMETERS**	**GTP VALUES**
1.	MANUFACTURER'S / SUPPLIER'S NAME AND ADDRESS WITH WORKS ADDRESS	TO BE FILLED BY MANUFACTURER
2.	MAKE AND TYPE OF METER	TO BE FILLED BY MANUFACTURER
3.	APPLICABLE STANDARD IS AS PER IS: 14697 /1999 (AMENDED UPTO DATE), IS: 15959 / 2011, CBIP TECH REPORT 325 AMENDED UP TO DATE, IS: 15707 / 2006 (YES/NO)	YES
4.	METER BEARS ISI MARK (YES/NO)	YES
5.	FREQUENCY	50 HZ ±5%
6.	ACCURACY CLASS OF METER	0.5S (FOR ACTIVE AND REACTIVE ENERGY)
7.	PT SECONDARY VOLTAGE	63.5 V PH-N
8.	RATED VOLTAGE	110 V PH-PH OR 3 X 63.5 V PH-N
9.	VOLTAGE RANGE	+15% TO – 30% OF RATED VOLTAGE
10.	BASIC CURRENT (IB) OF METER	1 AMP; 5 AMPS.
11.	MAXIMUM CONTINUOUS CURRENT (IMAX)	2 TIMES (200 %) OF IB.
12.	SHORT TIME OVER CURRENT	AS PER IS: 14697

		/ 1999.
13.	STARTING CURRENT OF METER	0.1% OF IB.
14.	CT RATIO OF METER	1 / 1 AMPS; 5 / 5 AMPS
15.	POWER CONSUMPTION IN EACH VOLTAGE CIRCUIT	SHALL NOT EXCEED 1.0 W AND 4 VA
16.	POWER CONSUMPTION IN EACH CURRENT CIRCUIT	SHALL NOT EXCEED 2 VA
17.	POWER FACTOR	ZERO LAG TO UNITY TO ZERO LEAD TO UNITY
18.	POWER SUPPLY IS SMPS & MICRO CONTROL TYPE (YES/NO)	YES
19.	STANDARD REFERENCE TEMPERATURE OF METER	27^0 C
20.	MEAN TEMPERATURE CO-EFFICIENT	SHALL NOT EXCEED 0.03%.
21.	KVA MD PROVIDED (YES/NO)	YES
22.	OPAQUE METER BASE & TRANSPARENT TOP COVER IS MADE OUT OF, UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE MATERIAL SO AS TO GIVE IT AND QUALITIES. (YES/NO)	YES
23.	POLY CARBONATE BODY OF METER CONFORMS TO IS: 11731 (FV-2 CATEGORY) (YES/NO)	YES
24.	POLY CARBONATE BODY MEETS TEST REQUIREMENT OF (a) HEAT DEFLECTION TEST AS PER ISO 75 > 150^0C (YES/NO)	YES
25.	(b) GLOW WIRE TEST AS PER IS: 11000 (PART 2/SEC-1) 1984 OR IEC PUB 60695-2-12 AT 900^0C (YES/NO)	YES

26.	(c) BALL PRESSURE TEST AS PER IEC--60695-10-2 (YES/NO)	YES
27.	(d) FLAMMABILITY TEST AS PER UL 94 OR IS 11731 (PART-2) 1986 (YES/NO)	YES
28.	TYPE TEST REPORT NOS. & DATE OF ABOVE (A) TO (D)	TO BE FILLED BY MANUFACTURER
29.	PHYSICAL WATER ABSORPTION VALUE OF METER BODY	TO BE FILLED BY MANUFACTURER
30.	THERMAL HDDT VALUE OF METER BODY	TO BE FILLED BY MANUFACTURER
31.	TENSILE STRENGTH OF METER BODY	TO BE FILLED BY MANUFACTURER
32.	FLEXURE STRENGTH OF METER BODY	TO BE FILLED BY MANUFACTURER
33.	MODULUS OF ELASTICITY OF METER BODY	TO BE FILLED BY MANUFACTURER
34.	IZOD IMPACT STRENGTH OF METER BODY NOTCHED AT 23°C	TO BE FILLED BY MANUFACTURER
35.	POLY-CARBONATE OPAQUE BASE AND TRANSPARENT TOP COVER IS ULTRA-SONICALLY WELDED (CONTINUOUS WELDING) (YES/NO)	YES
36.	THICKNESS OF MATERIAL FOR METER COVER & BASE	2 MM MINIMUM
37.	METER BODY TYPE TESTED FOR IP51 DEGREE OF PROTECTION AS PER IS: 12063 AGAINST INGRESS OF DUST, MOISTURE & VERMIN. (YES/NO)	YES
38.	IP51 DEGREE OF PROTECTION AS PER IS: 12063 TEST CERTIFICATE NO. & DATE	TO BE FILLED BY MANUFACTURER
39.	METER COVER IS SECURED TO BASE BY MEANS OF SEALABLE UNIDIRECTIONAL CAPTIVE SCREWS WITH TWO HOLES. (YES/NO)	TO BE FILLED BY MANUFACTURER

40.	TERMINAL BLOCK IS MADE FROM HIGH QUALITY NON-HYGROSCOPIC, FIRE RETARDANT, REINFORCED POLYCARBONATE / NON-BAKELITE MATERIAL (YES/NO)	YES
41.	MATERIAL OF WHICH THE TERMINAL BLOCK IS MADE IS CAPABLE OF PASSING THE TESTS GIVEN IN IS: 1336O (PART 6/SEC 17), ISO 75-1 (1993) & ISO 75-2 (1993) FOR A TEMPERATURE OF 135^{0}C AND A PRESSURE OF 1.8 MPA (METHOD A) (YES/NO)	YES
42.	TYPE TEST REPORT NOS. & DATE OF ABOVE	YES
43.	TWO SCREWS ARE PROVIDED IN EACH CURRENT & POTENTIAL TERMINAL FOR EFFECTIVELY CLAMPING THE EXTERNAL LEADS OR THIMBLES IN TERMINAL BLOCK (YES/NO)	YES
44.	MINIMUM INTERNAL DIAMETER OF TERMINAL HOLE	TO BE FILLED BY MANUFACTURER
45.	TERMINATION ARRANGEMENT IS PROVIDED WITH AN EXTENDED TRANSPARENT TERMINAL COVER AS PER CLAUSE NUMBER 6.5.2 OF IS: 14697 / 1999 (AMENDED UPTO DATE) IRRESPECTIVE OF REAR CONNECTIONS (YES/NO)	YES
46.	TERMINAL COVER IS UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE & IS MADE OF THE SAME MATERIAL AS THAT OF METER BODY (YES/NO)	YES
47.	TERMINAL COVER IS TRANSPARENT (YES/NO)	YES
48.	TERMINAL COVER ENCLOSES ACTUAL TERMINALS, CONDUCTOR FIXING SCREWS AND A SUITABLE LENGTH OF EXTERNAL CONDUCTORS AND THEIR INSULATION (YES/NO)	YES
49.	TERMINAL COVER IS PROVIDED WITH ONE SIDE HINGE/TWO TOP HINGES (YES/NO)	YES
50.	INDEPENDENT SEALING PROVISION IS MADE AGAINST OPENING OF THE TERMINAL COVER AND	YES

	FRONT COVER TO PREVENT UNAUTHORIZED TAMPERING (YES/NO)	
51.	BIDIRECTIONAL SCREWS WITH TWO HOLES FOR SEALING PURPOSE OF TERMINALCOVER ARE PROVIDED (YES/NO)	YES
52.	FIXING SCREWS USED ON THE TERMINAL COVER FOR FIXING AND SEALING ARE HELD CAPTIVE IN THE TERMINAL COVER (YES/NO)	YES
53.	PROPER SIZE OF GROOVES PROVIDED AT BOTTOM OF TERMINAL COVER FOR INCOMING SERVICE CONNECTIONS (YES/NO)	YES
54.	PUSH BUTTONS ARE PROVIDED AS PER SPECIFICATION (YES/NO)	YES
55.	PROVISION FOR AT LEAST TWO SEALS TO BE PUT BY UTILITY USER (YES/NO)	YES
56.	PROVISION OF DISPLAY OF HIGH RESOLUTION READING / ALTERNATE MODE (YES/NO)	YES
57.	OUTPUT DEVICE FOR TESTING OF METER IN THE FORM OF BLINKING LED WITH CONSTANT PULSE RATE IS PROVIDED (YES/NO)	YES
58.	RESOLUTION OF THE TEST OUTPUT DEVICE IS SUFFICIENT TO ENABLE THE STARTING CURRENT TEST IN LESS THAN 10 MINUTES (YES/NO)	YES
59.	PULSE RATE OF OUTPUT DEVICE IS PROGRAMMED ACCORDING TO PRIMARY VALUES OF VOLTAGE & CURRENT & IS PROVIDED ON NAMEPLATE (YES/NO)	YES
60.	METER CONSTANT IS INDELIBLY PRINTED ON THE NAME PLATE OF THE METER (YES/NO)	YES
61.	METER ACCURACY NOT AFFECTED BY AC / DC MAGNETIC FIELD AS PER CBIP 325 (YES/NO)	YES
62.	THE METER ACCURACY SHALL NOT BE AFFECTED BY EXTERNAL AC / DC / PERMANENT MAGNETIC FIELD AS PER CBIP TECHNICAL REPORT 325 WITH	YES

	LATEST AMENDMENTS. IF THE METER GETS AFFECTED UNDER INFLUENCE OF ANY MAGNETIC FIELD (AC / DC / PERMANENT), THEN THE SAME SHALL BE RECORDED AS MAGNETIC TAMPER EVENT WITH DATE & TIME STAMPING AND THE METER SHALL RECORD ENERGY MAXIMUM VALUE CURRENT (IMAX) AND REFERENCE VOLTAGE AT UNITY POWER FACTOR (YES/NO)	
63.	METER IS CAPABLE TO WITHSTAND AND NOT GET DAMAGED IF PHASE TO PHASE VOLTAGE IS APPLIED BETWEEN PHASES & NEUTRAL FOR FIVE MINUTES (YES/NO)	YES
64.	POWER SUPPLY UNIT IS MICRO CONTROL TYPE (SMPS) (YES/NO)	YES
65.	NON SPECIFIED DISPLAY PARAMETERS IN ARE BLOCKED AND NOT ACCESSIBLE FOR REPROGRAMMING AT SITE (YES/NO)	YES
66.	CTS ARE PROVIDED WITH MAGNETIC SHIELDING AND ARE TESTED SEPARATELY PRIOR TO ASSEMBLY (YES/NO)	YES
67.	COMPLETE METERING SYSTEM DOES NOT AFFECTED BY EXTERNAL ELECTROMAFNETIC INTERFERRENCE (YES/NO)	YES
68.	REAL TIME QUARTZ CLOCK IS USED IN METER FOR MAINTAINING TIME (IST) AND CALENDAR (YES/NO)	YES
69.	RTC BATTERY IS NON – RECHARGEABLE TYPE (YES/NO)	YES
70.	RTC PRE - PROGRAMMED FOR 30 YEARS DAY / DATE WITHOUT ANY NECESSITY FOR CORRECTION (YES/NO)	YES
71.	MAXIMUM DRIFT TIME OF RTC PER YEAR	SHALL NOT EXCEED +/- 300 SECONDS PER YEAR

72.	DAY / DATE SETTING & SYNCHRONISATION POSSIBLE THROUGH PASSWORD / KEY CODE (YES/NO)	YES
73.	RTC BATTERY & BATTERY FOR DISPLAY ARE SEPARATE (YES/NO)	YES
74.	METER WITHSTANDS HIGH VOLTAGE & HIGH FREQUENCY SURGES WHICH ARE SIMILAR TO THE SURGES PRODUCED BY INDUCTION COIL TYPE INSTRUMENTS WITHOUT AFFECTING THE ACCURACY OF THE METER (YES/NO)	YES
75.	ACCURACY OF METER IS NOT AFFECTED WITH APPLICATION OF ABNORMAL VOLTAGE / FREQUENCY GENERATING DEVICE SUCH AS SPARK DISCHARGE OF APPROXIMATELY 35 KV (YES/NO)	YES
76.	SPARK DISCHARGE OF APPROXIMATELY 35 KV CARRIED OUT (YES/NO)	YES
77.	METER LOGS UNSATISFACTORY OR NON FUNCTIONING OF RTC BATTERY (YES/NO)	YES
78.	METERING PROTOCOL AS PER ANNEX E - CATEGORY C1 METERS OF IS: 15959 / 2011 AMENDED UPTO DATE (YES/NO)	YES
79.	RS 232 & OPTICAL PORTS FOR COMMUNICATION AND WITH SEALING ARRANGEMENT ARE PROVIDED (YES/NO)	YES
80.	DEFAULT & MINIMUM BAUD RATE OF RS 232 & OPTICAL PORTS IS 9600 BPS (YES/NO)	YES
81.	INTERNAL NI-MH OR LI-ION OR NI CD MAINTENANCE FREE BATTERY OF LONG LIFE OF 10 YEARS WITH PUSH BUTTON ARRANGEMENT FOR ACTIVATION OF BATTERY (YES/NO)	YES
82.	METER PCB IS WIRE LESS & IS MADE BY SURFACE MOUNTING TECHNOLOGY (YES/NO)	YES
83.	METER RECORDS & DISPLAY TOTAL ENERGY	YES

	INCLUDING HARMONIC ENERGY (YES/NO)	
84.	NON VOLATILE MEMORY (NVM) WITH MINIMUM RETENTION PERIOD OF 10 YEARS IS PROVIDED (YES/NO)	YES
85.	6 (SIX) TOD TIME ZONES FOR ENERGY AND DEMAND ARE PROVIDED (YES/NO)	YES
86.	PROVISION FOR MD INTEGRATION PERIOD OF 15 MINUTE IS MADE (YES/NO)	YES
87.	PROVISION THROUGH COMMUNICATION DRIVEN RESET OF MD IS PROVIDED (YES/NO)	YES
88.	PROVISION TO RESET MD THROUGH LOCAL PUSH BUTTON IS PROVIDED (YES/NO)	YES
89.	PROVISION FOR AUTO RESET OF MD AT CERTAIN PREDEFINED PERIOD IS PROVIDED (YES/NO)	YES
90.	ALL ANTI TAMPER FEATURES ARE INCORPORATED IN METER AS PER SPECIFICATION (YES/NO)	YES
91.	METER LOGS TAMPER EVENTS AS PER SPECIFICATION (YES/NO)	YES
92.	TAMPER NO. & TAMPER EVENT IS REGISTERED IN TAMPER EVENT REGISTER (YES/NO)	YES
93.	THE NO. OF TIMES THE TAMPERING HAS BEEN DONE IS ALSO REGISTERED IN THE METER (YES/NO)	YES
94.	METER KEEPS RECORD OF TAMPER EVENTS FOR MINIMUM 200 EVENTS ON FIFO BASIS (YES/NO)	YES
95.	SUPPLY INDICATION IN THE FORM OF LED / LCD DISPLY IS PROVIDED (YES/NO)	YES
96.	SUPPLY INDICATION IS VISIBLE FROM THE FRONT OF THE METER (YES/NO)	YES
97.	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) OF MINIMUM 6 DIGITS AND MINIMUM 8 MM HEIGHT	YES

	AND WIDE VIEWING ANGLE IS PROVIDED (YES/NO)	
98.	SIZE OF DIGITS	TO BE FILLED BY MANUFACTURER
99.	AUTO DISPLAY CYCLING PUSH BUTTON WITH PERSISTENCE TIME OF 10 SECONDS IS PROVIDED (YES/NO)	YES
100.	PUSH BUTTON FOR HIGH RESOLUTION DISPLAY / ALTERNATE MODE OF DISPLAY IS PROVIDED (YES/NO)	YES
101.	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) IS SUITABLE FOR TEMPERATURE WITHSTAND OF 70^0C (YES/NO)	YES
102.	METER IS PROGRAMMED FOR (A) MD INTEGRATION PERIOD OF 15 MINUTES (YES/NO)	YES
103.	(B) AVERAGE POWER FACTOR WITH 2 DECIMAL DIGITS (YES/NO)	YES
104.	(C) AUTO RESET KVAMD AT 24.00 HRS. OF LAST DAY OF THE MONTH AS PER CLAUSE 10.00 (III) OF SPECIFICATION (YES/NO)	YES
105.	(D) ARRAY OF DATA TO BE RETAINED INSIDE THE METER MEMORY FOR THE LAST 32 DAYS FOR A CAPTURE PERIOD OF 15 MINUTES ON FIRST IN FIRST OUT BASIS (FIFO) (YES/NO)	YES
106.	SEQUENCE OF DISPLAY PARAMETERS IS AS PER SPECIFICATIONS (YES/NO)	YES
107.	METER RECORDS & DISPLAYS THE QUANTITES AS PER SPECIFICATION (YES/NO)	YES
108.	DISPLAY OTHER THAN SPECIFIED IS BLOCKED (YES/NO)	YES
109.	OTHER KVA MD VALUES ARE AVAILABLE IN RESET BACKUP DATA FOR 12 MONTHS.	YES

110.	METER DISPLAY RETURNS TO DEFAULT DISPLAY MODE IF 'PUSH BUTTON' IS NOT OPERATED FOR 15 SECONDS (YES/NO)	YES
111.	BILLING DATA IS AS PER SPECIFICATION	YES
112.	PROVISION FOR RECORDING HISTORY OF BILLING PARAMETERS FOR LAST 12 MONTHS (YES/NO)	YES
113.	PROVISION FOR LOAD SURVEY DATA FOR EVERY 15 MINUTES AND FOR PREVIOUS 32 DAYS FOR SPECIFIED PARAMETERS ON FIFO BASIS (YES/NO)	YES
114.	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	YES
115.	A DLMS COMPLIANT HHU AS PER ANNEX J OF IS: 15959 / 2011 IS PROVIDED (YES/NO)	YES
116.	PROVISION FOR AUTO POWER SAVE IS MADE ON HHU (YES/NO)	YES
117.	HHU HAS A MEMORY CAPACITY OF 512 MB SRAM (STATIC RAM) WITH BATTERY BACKUP & UPGRADEABLE AND BIOS / OS ON FLASH / EEPROM MEMORY OF 256 KB (RAM-512 MB, FLASH-2GB, SD CARD- 8GB WITH USB FACILITY (YES/NO)	YES
118.	HHU OFFERED IS FULLY TYPE TESTED AT APPROVED NABL LABORATORY FOR (a) TESTS OF MECHANICAL REQUIREMENT SUCH AS FREE FALL TEST, SHOCK TEST, VIBRATION TEST (YES/NO)	YES
119.	(b) TESTS OF CLIMATIC INFLUENCES SUCH AS TESTS OF PROTECTION AGAINST PENETRATION OF DUST AND WATER (IP 6X), DRY HEAT TEST, COLD TEST, DAMP HEAT CYCLIC TEST (YES/NO)	YES
120.	(c) TESTS FOR ELECTROMAGNETIC COMPATIBILITY (EMC) (YES/NO)	YES

121.	(d) TEST OF IMMUNITY TO ELECTROMAGNETIC HF FIELDS (YES/NO)	YES
122.	(e) RADIO INTERFERENCE MEASUREMENT (YES/NO)	YES
123.	TYPE TEST REPORT NOS. & DATE OF HHU (YES/NO)	YES
124.	BASE COMPUTER SOFTWARE IS "WINDOWS" BASED & USER FRIENDLY (YES/NO)	YES
125.	LICENSED COPIES OF BASE COMPUTER SOFTWARE ARE SUPPLIED FREE OF COST.	YES
126.	NO EDITING IN TRANSFERRED DATA IS POSSIBLE ON BASE COMPUTER AS WELL AS HHU BY ANY MEANS (YES/NO).	YES
127.	DOWNLOADING SOFTWARE IS SUBMITTED TO INSTALL ON OUR LAPTOP / PC FOR DIRECTLY DOWNLOADING DATA FROM METER WITHOUT THE USE OF HHU (YES/NO)	YES
128.	SOFTWARE PROVIDED ON LAPTOP/PC IS COMPATIBLE TO READ DATA FROM USB DRIVE (YES/NO)	YES
129.	CABLE WITH USB TERMINATION PROVIDED (YES/NO)	YES
130.	TOTAL TIME TAKEN FOR DOWNLOADING BILLING, TAMPER AND LOAD SURVEY DATA FOR 32 DAYS	LESS THAN OR EQUAL TO 9 MINUTES
131.	DOWNLOADING TIME OF ONLY BILLING DATA	LESS THAN OR EQUAL TO 20 SECS
132.	PERMANENT NATURE CONNECTION DIAGRAM OF METER IS SHOWN ON INSIDE PORTION OF THE TERMINAL COVER (YES/NO)	YES
133.	DISTINCTLY MARKED NAME PLATE WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS, CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL IS PROVIDED ON	YES

	METER (YES/NO)	
134.	METER SERIAL NUMBER IS BAR CODED WITH SIZE OF NOT BE LESS THAN 35X5 MM ALONG WITH NUMERIC NUMBER (YES/NO)	YES
135.	CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL AND INDELIBLY AND DISTINCTLY MARKED WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS NAME PLATE IS PROVIDED ON METER (YES/NO)	YES
136.	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	YES
137.	CATEGORY OF METER AS "CATEGORY C1 – HT (PT / CT) CONSUMER METER" IN 3 MM BOLD FONT IS MARKED ON NAME PLATE (YES/NO)	YES
138.	WHETHER METER IS TYPE TESTED (YES/NO)	YES
139.	TYPE TEST REPORT NOS. & DATE OF METER	TO BE FILLED BY MANUFACTURER
140.	METER PROTOCOL REPORT NOS. & DATES	TO BE FILLED BY MANUFACTURER
141.	ALL ACCEPTANCE & ROUTINE TESTS, AS PER IS: 14697 / 1999 AMENDED UPTO DATE & THIS SPECIFICATION ARE CARRIED OUT ON METER & METER BODY (YES/NO)	TO BE FILLED BY MANUFACTURER
142.	TRANSPORTATION TEST IS CARRIED OUT (YES/NO)	YES
143.	METER & HHU ARE GUARANTEED FOR A PERIOD OF 66 MONTHS FROM THE DATE OF SUPPLY OR 60 MONTHS FROM THE DATE OF COMMISSIONING, WHICHEVER IS EARLIER (YES/NO)	YES
144.	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING	YES

	GUARANTEE PERIOD (YES/NO)	
145.	FURNISH PRINCIPLE OF OPERATION OF METER OUTLINING THE METHODS AND STAGES OF COMPUTATIONS OF VARIOUS PARAMETERS STARTING FROM INPUT VOLTAGE AND CURRENT SIGNALS INCLUDING SAMPLING RATE IF APPLICABLE	YES
146.	IN HOUSE TESTING FACILITY IS AVAILABLE FOR (A) AC VOLTAGE TEST (YES/NO)	YES
147.	(b) INSULATION RESISTANCE TEST (YES/NO)	YES
148.	(c) ACCURACY REQUIREMENT (YES/NO)	YES
149.	(d) TEST ON LIMITS OF ERRORS (YES/NO)	YES
150.	(e) TEST ON METER CONSTANT (YES/NO)	YES
151.	(f) TEST OF STARTING CONDITION (YES/NO)	YES
152.	(g) TEST OF NO-LOAD CONDITION (YES/NO)	YES
153.	(h) REPEATABILITY OF ERROR TEST (YES/NO)	YES
154.	(i) TEST OF POWER CONSUMPTION (YES/NO)	YES
155.	(j) TRANSPORTATION TEST (YES/NO)	YES
156.	(k) TAMPER CONDITIONS AS PER MSEDCL SPECIFICATION (YES/NO)	YES
157.	(l) GLOW WIRE TEST (YES/NO)	YES
158.	(m) LONG DURATION TEST (YES/NO)	YES
159.	(n) FLAMABILITY TEST (YES/NO)	YES
160.	(o) MANUFACTURER HAVE DULY CALIBRATED RSS METER OF CLASS 0.01 ACCURACY	YES
161.	15 (FIFTEEN) NOS. OF SAMPLE METERS & 1 (ONE) HHU AS PER TECHNICAL SPECIFICATIONS ARE SUBMITTED ALONGWYH OFFER (YES/NO)	YES

162.	MANUFACTURING PROCESS, ASSEMBLY, TESTING & MANUFACTURING ACTIVITIES AS PER TECHNICAL SPECIFICATION (YES/NO)	YES
163.	AGEING TEST FOR 72 HOURS AT 55^0 C TEMPERATURE AND ATMOSPHERIC HUMIDITY UNDER REAL LIFE CONDITION AT FULL LOAD CURRENT TO ELIMINATE INFANT MORTALITY IS CARRIED OUT (YES/NO)	YES
164.	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	YES
165.	QUALITY ASSURANCE PLAN AS PER SPECIFICATIONS IS ENCLOSED (YES/NO)	TO BE FILLED BY MANUFACTURER
166.	COMPONENT SPECIFICATION AS PER SPECIFICATION (YES/NO)	YES

Technical Specification Item: 3P4wCT PT 5A AMR HT TOD meter of 0.2S F.

Maharashtra State Electricity Distribution Company Limited

SPECIFICATION NO.MMC: MSC/DB/01

TECHNICAL SPECIFICATION

For

3P4WCT PT 5A AMR HT TOD METER OF 0.2S F.

For

DISTRIBUTION SYSTEM

IN

MSEDCL

MATERIAL SPECIFICATIONS CELL

TECHNICAL SPECIFICATION

THREE PHASE FOUR WIRE CT / PT OPERATED
0.2 S CLASS, 1 AMP OR 5 AMPS ENERGY METER
AS PER CATEGORY "C1" OF IS: 15959

Contents

1.00 SCOPE

This specification covers design; manufacture, testing, supply and delivery of ISI mark HT three phase four wire CT / PT operated 1 Amps or 5 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter as per Category C1 of IS: 15959 / 2011 amended upto date. The meters shall be suitable for measurement of Active Energy (kWh), Reactive Energy (kVArh) Lag and (kVArh) Lead separately, Apparent Energy (kVAh), demand (kW), demand (kVA), etc. as per Power tariff requirement for AC balanced / unbalanced loads of HT Consumers.

The meter 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 purchaser, who will interpret the meaning of drawings and specification and shall have the power to reject any work or material which, in his judgment is not in accordance therewith. The offered material shall be complete with all components necessary for their effective and trouble free operation. Such components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specifically brought out in these specifications and / or the commercial order or not.

2.00 APPLICATION

For use on HT consumer installations.

3.00 SERVICE CONDITIONS

As per IS: 14697 / 1999 (amended up to date), the meter must perform satisfactorily under Non-Air Conditioned environment (within stipulations of IS). The meters to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

Environmental Conditions

(a) Maximum ambient temperature	55^0 C
(b) Maximum ambient temperature in shade	50^0 C
(c) Minimum temperature of air in shade	5^0 C
(d) Maximum daily average temperature	40^0 C
(e) Maximum yearly weighted average temperature	32^0 C
(f) Relative Humidity	10 to 95 %
(g) Maximum Annual rainfall	1450 mm
(h) Maximum wind pressure	150 Kg/m^2

(i) Maximum altitude above mean sea level	1000 mtrs
(j) Isoceraunic level	50 days/year
(k) Seismic level (Horizontal acceleration)	0.3 g

(l) Climate: Moderately hot and humid tropical climate conducive to rust and fungus growth.

4.00 STANDARD TO WHICH METER SHALL COMPLY

IS: 15959 / 2011 – Data Exchange for Electricity Meter Reading, Tariff and Load Control – Companion Specification for Category – "C1" Meters amended upto date;

IS: 14697 / 1999 (amended up to date) – AC Static Transformer operated Watt-hour and VAR-hour Meters, Class 0.2S – Specification;

CBIP Tech Report 325 amended up to date for AC Static Transformer operated Watt Hour & VAR-Hour Meters (class 0.2S);

IS: 15707 / 2006 Specification for Testing, evaluation, installation & maintenance of AC Electricity Meters-Code of Practice;

CEA regulations and MERC guidelines with latest amendments.

The specifications given in this document supersedes the relevant clauses of IS: 14697 / 1999 (amended up to date) wherever applicable.

The equipment meeting with the requirements of other authoritative standards, which ensures equal or better quality than the standards mentioned above, also shall be considered.

In case the bidder wishes to offer material conforming to the other authoritative standards, salient points of difference between the standards adopted and the specific standards shall be clearly brought out in relevant schedule.

Copy of such standards with authentic English Translations, shall be furnished along with the offer.

In case of conflict related with communication protocol, the IS: 15959 / 2011 – Data Exchange for Electricity Meter Reading, Tariff and Load Control – Companion Specification shall prevail upon.

For conflict related with other parts of the specification, the order of priority shall be – (i) this technical specification, (ii) IS: 14697 / 1999 (Amended up to date), (iii) IEC, (iv) other authoritative standards.

In case of any difference between provisions of these standards, the provisions of this specification shall prevail.

5.00 GENERAL TECHNICAL REQUIREMENT

1)	TYPE	Three Phase, Four Wire 1 Amp or 5 Amps fully Static AMR compatible TOD Tri - Vector Energy Meter with Optical & RS 232 Port as per Category C1 of IS: 15959 / 2011 (with DLMS protocol) for use on HT Consumers installation.
2)	FREQUENCY	50 Hz ±5%
3)	ACCURACY CLASS	0.2S (FOR ACTIVE AND REACTIVE ENERGY)
4)	PT SECONDARY VOLTAGE	63.5 V Ph-N
5)	RATED VOLTAGE	110 V Ph-Ph or 3 x 63.5 V Ph-N
6)	VOLTAGE RANGE	+15% to – 30% of rated voltage.
7)	PT RATIO	$\frac{11}{\sqrt{3}}$ kV/$\frac{110}{\sqrt{3}}$ V
8)	CT RATIO	1 / 1 Amps; 5 / 5 Amps
9)	BASIC CURRENT (I_b)	1 Amp; 5 Amps.
10)	MAXIMUM CONTINUOUS CURRENT (I_{max})	2 times (200 %) of Ib.
11)	SHORT TIME CURRENT	As per IS: 14697 / 1999.
12)	STARTING CURRENT	0.1% of Ib.
13)	POWER CONSUMPTION	The active and apparent power consumption, in each voltage circuit, at reference voltage, reference temperature and reference frequency shall not exceed 1.0 W and 4 VA. The apparent power taken by each current circuit, at basic current Ib,

		reference frequency and reference temperature shall not exceed 2 VA.
14)	POWER FACTOR	Power Factor range: Zero Lag to unity to Zero Lead to unity Avg. P.F = Total(kWh) / Total (kVAh) $kVAh = \sqrt{(Kwh)^2 + (RKVAhlag + RKVAhlead)^2}$
15)	DESIGN	Meter shall be designed with application specific integrated circuit (ASIC) or micro controller; shall have no moving parts; electronic components shall be assembled on printed circuit board using surface mounting technology; factory calibration using high accuracy (0.1 class) software based test bench.
16)	POWER SUPPLY	SMPS
17)	ISI MARK	The meter shall bear ISI Mark
18)	TEMPERATURE	The standard reference temperature for performance shall be 27^0 C. The mean temperature co-efficient shall not exceed 0.03%.

6.00 CONSTRUCTIONAL REQUIREMENT

6.01 GENERAL MECHANICAL REQUIREMENT

The meter shall be designed and constructed in such a way as to avoid introducing any danger in normal use and under normal conditions, so as to ensure especially:

(a) personal safety against electric shock:

(b) personal safety against effects of excessive temperature;

(c) safety against spread of fire;

(d) Protection against penetration of solid objects, dust and water.

(e) Detection of fraud / pilferage

6.02 The meter shall be projection type and shall be dust and moisture proof. All parts that are likely to develop corrosion under normal

working condition shall be effectively protected against corrosion by suitable method to achieve durable results.

6.03 All insulating materials used in the construction of the meter shall be substantially non-hygroscopic, non ageing and of tested quality.

6.04 METER CASE

6.04.01 The meter base & cover shall be made out of unbreakable, high grade, fire resistant Polycarbonate material so as to give it tough and non-breakable qualities. Meter base shall be opaque and meter top cover shall be transparent.

6.04.02 The poly carbonate body of the meter shall conform to IS: 11731 / 1986 (FV-2 Category) besides meeting the test requirement of heat deflection test as per ISO 75, glow wire test as per the IS: 11000 (part 2/SEC-1) 2008 OR IEC PUB 60695-2-12, Ball pressure test as per IEC-60695-10-2 and Flammability Test as per UL 94 or as per IS: 11731 (Part-2) 1986.

6.04.03 The Poly-carbonate opaque base and transparent top cover of meter shall be ultra-sonically welded (continuous welding) so that once the meter is manufactured and tested at factory; it shall not be possible to open the cover at site except the terminal cover. The thickness of material for meter cover and base shall be 2 mm (minimum).

6.04.04 The meter body shall be type tested for IP51 degree of protection as per IS: 12063 against ingress of dust, moisture & vermin. The type test certificate shall be submitted along with the offer.

6.04.05 The meter cover shall be secured to base by means of sealable unidirectional captive screws with two holes.

6.05 TERMINALS & TERMINAL BLOCK

6.05.01 The terminal block shall be made from high quality non-hygroscopic, fire retardant, reinforced polycarbonate / non-Bakelite material which shall form an extension of the meter case.

6.05.02 The material of which the terminal block is made shall be capable of passing the tests given in IS: 1336O (Part 6/Sec 17), ISO 75-1 (1993) & ISO 75-2 (1993) for a temperature of 135^0C and a pressure of 1.8 MPa (Method A).

6.05.03 The holes in the insulating material which form an extension of the terminal holes shall be of sufficient size to also accommodate the insulation of the conductors.

6.05.04 The manner of fixing the conductors to the terminals shall ensure adequate and durable contact such that there is no risk of loosening or undue heating.

6.05.05 Screw connections transmitting contact force and screw fixings which may be loosened and tightened several times during the life of meter shall screw into metal nuts.

6.05.06 All parts of every terminal shall be such that the risk of corrosion resulting from contact with any other metal part is minimized.

6.05.07 Electrical connections shall be so designed that contact pressure is not transmitted through insulating material of the terminal block.

6.05.08 The terminals, the conductor fixing screws or the external or internal conductors shall not be liable to come into contact with terminal covers.

6.05.09 Two screws shall be provided in each current & potential terminal for effectively clamping the external leads or thimbles.

6.05.10 Each clamping screw shall engage a minimum of three threads in the terminal. The ends of screws shall be such as not to pierce and cut the conductors used.

6.05.11 The minimum internal diameter of terminal hole shall be as per IS: 14697 / 1999 or CBIP Tech Report 325.

6.05.12 The manufacturer shall ensure that the supporting webs between two terminals of the terminal block shall be sufficiently high to ensure that two neighboring terminals do not get bridged by dust and there shall not be any possibility of flash over between adjacent terminals of the terminal block.

6.06 TERMINAL COVER

6.06.01 The termination arrangement shall be provided with an extended transparent terminal cover as per clause number 6.5.2 of IS: 14697 / 1999 (amended upto date) irrespective of rear connections.

6.06.02 The terminal cover shall be made out of same material as that of meter body. The terminal cover shall be unbreakable, high grade, fire resistant Polycarbonate material so as to give it tough and non-breakable qualities. The terminal cover shall be transparent.

6.06.03 The terminal cover shall enclose the actual terminals, the conductor fixing screws and unless otherwise specified, a suitable length of external conductors and their insulation.

6.06.04 The terminal cover shall be provided with one side hinge/two top hinges.

6.06.05 Independent sealing provision shall be made against opening of the terminal cover and meter body cover to prevent unauthorized tampering. It is necessary to provide bidirectional screws with two holes

for sealing purpose of terminal cover. The meter shall be pilfer-proof & tamper-proof.

6.06.06 The fixing screws used on the terminal cover for fixing and sealing in terminal cover shall be held captive in the terminal cover.

6.06.07 Proper size of grooves shall be provided at bottom of this terminal cover for incoming service connections.

6.06.08 When the meter is mounted, no access to the terminals by any means shall be possible without breaking seals(s) of the terminal cover.

6.07 RESISTANCE TO HEAT AND FIRE

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

6.08 The meter shall be completely factory sealed except the terminal block cover.

6.09 The provision shall be made on the meter for at least two seals to be put by utility user.

6.10 A Push button facility shall be provided for high resolution reading / alternate mode of display, as brought out elsewhere in this specification. Facility of scrolling of all the readings up and down in all the display modes shall be provided.

6.11 OUTPUT DEVICES

The meter shall have test output accessible from the front and be capable of being monitored with suitable testing equipment while in operation at site. The operation indicator must be visible from front. The test output device shall be provided in the form of blinking LED. Resolution of the test output device shall be sufficient to enable the starting current test in less than 10 minutes. The pulse rate of output device which is Pulse / kWh and Pulse / kVArh (meter constant) shall be programmed according to primary values of voltage & current & shall be indelibly provided on the nameplate.

6.12 The meter accuracy shall not be affected by external AC / DC / permanent magnetic field as per CBIP Technical Report 325 with latest amendments. If the meter gets affected under influence of any magnetic field (AC / DC / Permanent), then the same shall be recorded as magnetic tamper event with date & time stamping and the meter shall record energy maximum value current (Imax) and reference voltage at unity power factor.

6.13 The meter shall also be capable to withstand and shall not get damaged if phase-to-phase voltage is applied between phases & neutral for five minutes without affecting the accuracy.

6.14 In meter, power supply unit shall be micro control type instead of providing transformer and then conversion to avoid magnetic influence.

6.15 Non specified display parameters in the meter shall be blocked and it shall not be accessible for reprogramming at site. However these parameters shall be programmable at site through representative of meter manufacturer.

6.16 Complete metering system shall not be affected by the external electromagnetic interference such as electrical discharge of cables and capacitors, harmonics, electrostatic discharges, external magnetic fields and DC current in AC supply etc.

6.17 Internal CTs are to be provided with magnetic shielding and they shall be tested separately prior to assembly by the meter manufacturer.

6.18 PCB used in meter shall be made by Surface Mounting Technology.

6.19 REAL TIME INTERNAL CLOCK (RTC)

The real time quartz clock shall be used in the meter for maintaining time (IST) and calendar. The RTC shall be non - rechargeable and 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), Laptop Computer 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'.

The RTC battery & the battery for display in case of power failure shall be separate.

6.20 The meter shall remain immune for the test of electromagnetic HF/RF defined under the test no. 4.0 for EMI/EMC of IS 14697:1999 amended up to date.

6.21 For any higher signals than the present standards and MSEDCL technical specifications indicated above cl. 6.21, the energy meters shall be immune & the accuracy of energy meters shall not get affected.

6.22 The communication of energy meters shall not be affected considering the above feature state in the clause 6.21 & 6.22.

6.23 The meter shall withstand any type of High Voltage and High Frequency surges which are similar to the surges produced by induction coil type instruments without affecting the accuracy of the meter.

The accuracy of the meter shall not be affected with the application of abnormal voltage / frequency generating device such as spark discharge of approximately 35 kV.

The meter shall be tested by feeding the output of this device to meter in any of the following manner for 10 minutes:

(i) On any of the phases or neutral terminals

(ii) On any connecting wires of the meter (Voltage discharge with 0-10 mm spark gap)

(iii)At any place in load circuit.

The accuracy of meter shall be checked before and after the application of above device.

6.24 SELF DIAGNOSTIC FEATURES

6.24.01 The meter shall keep log in its memory for unsatisfactory functioning or non-functioning of Real Time Clock battery, also it shall be recorded and indicated in reading file at base computer software.

6.24.02 All display segments: "LCD Test" display shall be provided for this purpose.

6.25 The watch dog provided shall invariably protect the hanging of microprocessor during such type of tampering devices.

6.26 METER PROTOCOL

The meter protocol shall be as per Annex E - Category C1 meters of IS: 15959 / 2011 amended upto date.

6.27 COMMUNICATION CAPABILITY

The meter shall be provided with two ports for communication of the measured / collected data as per IS: 15959 / 2011, i.e. a hardware port compatible with RS-232 specifications (RJ - 11 / RJ - 45 type is also acceptable) which shall be used for remote access through suitable Pluggable Modem (4G/2G/3G/NB-IoT/PLCC/LPRF) 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. RS-232 port or TCP / IP port as required on terminal block is also acceptable. Sealing arrangement for Optical & RS 232 port or TCP / IP port as required shall be provided.

During data communication process through either AMR or MRI, the meter energy recording should not get affected.

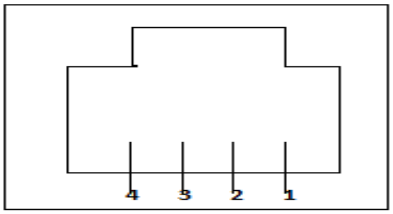
Both ports shall support the default and minimum baud rate of 9600 bps.

Necessary chord for Optical Port of minimum length of 1 metre in the ratio 25:1 shall be provided free of cost.

The minimum requirements for RS-232 based systems are described below:

i. The interface shall meet all the requirements of RS-232 specifications in terms of Physical media, Network topologies, maximum devices, maximum distance, mode of operation, etc.

ii. RJ11 type connectors have to be provided to easily terminate the twisted pair.



PIN DESCRIPTION

Pin No	Signal
1	RTS (Ready To Send)
2	Ground (GND)
3	Transmit Data (Tx)
4	Receive Data (Rx)

6.28 The meter shall have facility to read the default display parameters during Power supply failure. For this purpose an internal battery may be provided.

The internal battery shall be Ni-mh or Li-ion or NI CD maintenance free battery of long life of 10 years. A suitable Push Button arrangement for activation of this battery shall be provided.

6.29 WIRE / CABLE LESS DESIGN

The meter PCB shall be wireless to avoid improper and loose connections/ contacts.

6.30 Meter shall record & display total energy including Harmonic energy.

6.31 Reverse reading lock of main KWh and kVAh reading is to be incorporated with necessary software modification if required additionally.

6.32 The data stored in the meters shall not be lost in the event of power failure. The meter shall have Non Volatile Memory (NVM), which does not need any battery backup. The NVM shall have a minimum retention period of 10 years.

7.00 TOD TIMINGS

There shall be provision for at least 6 (SIX) TOD time zones for energy and demand. The number and timings of these TOD time zones shall be programmable by manufacturer both at site / factory.

At present the time zones shall be programmed as below:

ZONE "A" (TZ1): 0000 Hrs to 0600 Hrs and 2200 Hrs to 2400 Hrs.

ZONE "B" (TZ2): 0600 Hrs to 0900 Hrs and 1200 Hrs to 1800 Hrs.

ZONE "C" (TZ3): 0900 Hrs to 1200 Hrs.

ZONE "D" (TZ4): 1800 Hrs to 2200 Hrs.

8.00 DEMAND INTEGRATION PERIOD

The maximum demand integration period shall be set at 15 minutes with block window method.

9.00 MD RESET

The meter shall have following MD resetting options.

i) Communication driven reset;

ii) Manual resetting arrangement with sealing facility;

iii) Automatic reset on First day of every month at 00.00 Hrs. This option shall be blocked by default and made programmable through hand held terminal / CMRI for the actual date required.

10.00 TAMPER AND FRAUD MONITORING FEATURES

10.01 ANTI TAMPER FEATURES.

The meter shall detect and correctly register energy under following tamper conditions:

(a) The meter accuracy shall not be affected by change of phase sequence. It shall maintain the desired accuracy in case of reversal of phase sequence.

(b) The meter shall continue to work even without neutral.

(c) The meter shall work in absence of any two phases i.e. it shall work

on any one phase wire and neutral, to record relevant energy.

(d) The meter accuracy shall not be affected by external AC / DC / permanent magnetic field as per CBIP Technical Report 325 with latest amendments. If the meter gets affected under influence of any magnetic field (AC / DC / Permanent), then the same shall be recorded as magnetic tamper event with date & time stamping and the meter shall record energy maximum value current (Imax) and reference voltage at unity power factor.

(e) If a consumer tries to steal power by disconnecting the voltage supply of one or two phases of the meter externally or by tampering so that no voltage or partial voltage (< 50% of Vref) is available to voltage circuit of meter & current is flowing in that phase, the meter shall record energy (kVAh & kWh) at Vref, current available in these phases & unity power factor.

(f) The meter shall remain immune for the test of electromagnetic HF/RF defined under the test no. 4.0 for EMI/EMC of IS 14697:1999 amended up to date. For any higher signals than the present standards and MSEDCL technical specifications indicated above, the energy meters shall be immune & the accuracy of energy meter shall not get affected.

The separate slot with 10 no. occurrences of EMI/EMC tamper along with date & time stamp shall be provided.

10.02 TAMPER EVENTS

10.02.01 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. as per relevant IS.

10.02.02 The meter shall record the occurrence and restoration of tamper events of current, voltages, kWh, kVAh power factor, event code, date & time etc. listed in Table 32 to 37 of IS: 15959 / 2011.

10.02.03 In the event the meter is forcibly opened, even by 2 to 4 mm variation of the meter cover, same shall be recorded as tamper event with date & time stamping as per table 37 of IS: 15959 / 2011 and the meter shall continuously display that the cover has been tampered.

10.02.04 The detection of the tamper event shall be registered in the tamper event register. The no. of times the tampering has been done shall also be registered in the meter.

10.02.05 Tamper details shall be retrieved by authorized personnel through either of the following:

i) HHU.

ii) Remote access through suitable communication network.

10.02.06 Minimum 200 numbers of events (occurrences & restoration with date & time) shall be available in the meter memory. The recording of abnormal events shall be on FIFO basis as per IS15959. The unrestored events shall be recorded separately and shall not be deleted till they get recovered (permissible upto 3 months).

All the information of data shall be made available in simple & easy to understand format.

10.03 The threshold values for various tampers are as below.

Sr. No.	**Description**	**Occurrence (With Occ. Time 5 min.)**	**Restoration (With Rest. Time 5 min.)**
1.	PT link Missing (Missing potential)	< 50% of Vref and current in that phase is > 1% Ib	> 50 % of Vref
2.	Over voltage in any phase	> 115 % of Vref	< 115 % of Vref
3.	Low voltage in any phase	< 70 % of Vref	> 70 % of Vref
4.	Voltage Unbalance	Vmax - Vmin > 10 % Vmax	Vmax - Vmin < 10 % Vmax
5.	CT reverse	Change in direction of current	Current flow in forward direction.
6.	CT Open.	Zero Amps in one or two phases and current in at least 1 phase is > 5% Ib for 15 minutes.	> 3 % Ib for 15 min in the tampered phase for 15 min.

7.	Current Unbalance. (Diff. of phase currents)	> 30 % Iref* for 15 min	< 30 % Iref* for 15 min
8.	Current Bypass	Bypass Current > 50 % Iref* for 15 min	Bypass Current < 30 % Iref* for 15 min
9.	Over Current in any Phase	> 120 % I_b	< 120 % I_b
10.	Influence of permanent magnet or AC / DC electromagnet / permanent magnet	Immediate	1 minute after removal
11.	Neutral Disturbance	--	--
12.	Power failure	Immediate	Immediate
13.	Very Low PF	--	--
14.	Meter Cover Opening	(2 to 4 mm) Immediate (Occurance only)	

Q* Higher of 3 phase currents shall be taken as reference for this purpose.

11.00 QUANTITIES TO BE MEASURED & DISPLAYED

The meter shall be capable of measuring and displaying the following electrical quantities within specified accuracy limits for polyphase balanced or unbalanced loads:

a) Instantaneous Parameters such as phase and line voltages, currents, power factors, overall kVA, kW, kVAr, power factor, frequency etc as per details given in the table below and IS: 15959 / 2011.

b) Block Load Profile Parameters such as kVAh, kWh, kVArh (lag), kVArh (lead), Maximum Demand (MD) in kW / kVA / power factor / phase and line voltages / currents etc. as per details given in the table below and IS: 15959 / 2011.

c) Billing Profile Parameters such as cumulative energy kWh / cumulative kVAh / cumulative energy kVArh, etc. as per details given in the table below and IS: 15959 / 2011.

In addition to above the meter shall also record the Name plate details, programmable parameters (readable as profile), occurrence and restoration of tamper events along with the parameters (Table 30, 31 32, 33, 34, 35, 36, 37 & 39 respectively) of IS: 15959 / 2011.

Detail of category wise parameters requirement suitable for HT (CT / PT) consumer metering is given in following tables of IS: 15959 / 2011.

Category C1	Parameter group	Annexure Table No.
HT (CT / PT) consumers Energy Meters	Instantaneous parameters	27
	Block Load Profile parameters	28
	Billing Profile Parameters	29
	Name Plate details	30
	Programmable Parameters	31
	Event Conditions	32 to 37
All logging parameters for each of the event condition for 3 Φ / 4W	Capture parameters for event (Event Log Profile)	39

12.00 DISPLAY OF MEASURED VALUES

12.01 DISPLAY INDICATORS

The supply indication shall be displayed permanently by LCD as a minimum and shall be visible from the front of the meter. In case of non available of voltage to any phase(s), the LCDs of that particular phase shall stop glowing or those particular indicator(s) shall start blinking on the LCD display of meter.

12.02 Permanently backlit LCD panel shall show the relevant information about the parameters to be displayed. The corresponding non-volatile memory shall have a minimum retention time of 10 years.

In the case of multiple values presented by a single display it shall be The meter shall have 6 digits (with +/- indication), parameter identifier, permanently backlit Liquid Crystal Display (LCD) with wide viewing angle. The size of digit shall be minimum 8x5 mm. The decimal units shall not be displayed in auto scroll mode. However it shall be displayed in push button mode or alternate mode for high resolution display for

testing. Auto display cycling push button is required with persistence time of 10 Seconds. LCD shall be suitable for temperature withstand of 70^0 C; adequate back up arrangement for storing of energy registered at the time of power interruption shall be provided.

12.03 The meters shall be pre-programmed for following details.

a) PT Ratio: $\frac{11}{\sqrt{3}}$kV/$\frac{110}{\sqrt{3}}$V

b) CT Ratio: 1/1 Amps or 5/5 Amps as per requirement.

c) MD resetting shall be auto as per clause no. 9.00 (iii).

d) MD Integration Period is 15 Minutes real time based.

e) Average power factor with 3 decimal digits shall be displayed.

f) The array of data to be retained inside the meter memory shall be for the last 32 days for a capture period of 15 minutes. Load survey data shall be first in first out basis (FIFO).

g) The display of various parameters in Normal Mode & Alternate mode shall be as per table 27 & 29 (except 8 & 9) of Annex E of IS: 15959 / 2011 in the sequence as below. Display other than specified below shall be blocked. The scroll period for auto scroll shall be 10 secs.

SN	PARAMETERS
A	**NORMAL DISPLAY (DEFAULT DISPLAY)**
1.	LCD Test
2.	Real Time Clock – Date & Time
3.	Voltage – V_R
4.	Voltage – V_Y
5.	Voltage – V_B
6.	Current – I_R
7.	Current – I_Y
8.	Current – I_B
9.	Cumulative Energy – kWh
10.	Cumulative Energy – kWh - TOD Zone A (TZ1)

11.	Cumulative Energy – kWh - TOD Zone B (TZ2)
12.	Cumulative Energy – kWh - TOD Zone C (TZ3)
13.	Cumulative Energy – kWh - TOD Zone D (TZ4)
14.	Cumulative Energy – kVArh - Lag
15.	Cumulative Energy – kVArh - Lag- TOD Zone A (TZ1)
16.	Cumulative Energy – kVArh - Lag- TOD Zone B (TZ2)
17.	Cumulative Energy – kVArh - Lag- TOD Zone C (TZ3)
18.	Cumulative Energy – kVArh - Lag- TOD Zone D (TZ4)
19.	Cumulative Energy –kVArh - Lead
20.	Cumulative Energy – kVArh - Lead- TOD Zone A (TZ1)
21.	Cumulative Energy – kVArh - Lead- TOD Zone B (TZ2)
22.	Cumulative Energy – kVArh - Lead- TOD Zone C (TZ3)
23.	Cumulative Energy – kVArh - Lead- TOD Zone D (TZ4)
24.	Cumulative Energy – kVAh
25.	Cumulative Energy – kVAh - TOD Zone A (TZ1)
26.	Cumulative Energy – kVAh - TOD Zone B (TZ2)
27.	Cumulative Energy – kVAh - TOD Zone C (TZ3)
28.	Cumulative Energy – kVAh – TOD Zone D (TZ4)
29.	Current MD – kVA with occurance date & time
30.	MD - kVA – TOD Zone A (TZ1) with occurance date & time
31.	MD - kVA – TOD Zone B (TZ2) with occurance date & time
32.	MD - kVA – TOD Zone C (TZ3) with occurance date & time
33.	MD - kVA – TOD Zone D (TZ4) with occurance date & time
34.	Number of MD – kVA reset

35.	Rising MD with elapsed time
36.	Three Phase Power Factor – PF
37.	Cumulative Tamper Count
38.	Meter Cover Opening – Occurance with date and time.
B	**ON DEMAND DISPLAY (ALTERNATE MODE)**
1.	Last date & time of MD - kVA reset
2.	Current – I_R
3.	Current – I_Y
4.	Current – I_B
5.	Voltage – V_R
6.	Voltage – V_Y
7.	Voltage – V_B
8.	Signed Power Factor – R Phase
9.	Signed Power Factor – Y Phase
10.	Signed Power Factor – B Phase
11.	Frequency
12.	High resolution kWh (for calibration)
13.	High resolution kVArh Lag(for calibration)
14.	High resolution kVArh Lead(for calibration)
15.	High resolution kVAh (for calibration)
16.	Running Demand kVA (for calibration)
17.	M1 MD - kVA – TOD Zone A (TZ1) with occurance date & time
18.	M1 MD - kVA – TOD Zone B (TZ2) with occurance date & time
19.	M1 MD - kVA – TOD Zone C (TZ3) with occurance date & time

20.	M1 MD - kVA – TOD Zone D (TZ4) with occurance date & time
21.	M2 MD - kVA – TOD Zone A (TZ1) with occurance date & time
22.	M2 MD - kVA – TOD Zone B (TZ2) with occurance date & time
23.	M2 MD - kVA – TOD Zone C (TZ3) with occurance date & time
24.	M2 MD - kVA – TOD Zone D (TZ4) with occurance date & time
25.	Last Tamper Event with date and time.

h) Other KVA MD values shall be available in reset backup data for 12 months.

i) The meter display shall return to Default Display mode (mentioned above) if the 'Push button' is not operated for 15 seconds.

13.00 BILLING DATA, BILLING HISTORY & BLOCK LOAD SURVEY

13.01 BILLING DATA

The billing data shall be as per table 29 of Annex E of IS: 15959 / 2011 for category C1 and is summarised as below.

Sr. No.	Parameters
1.	Billing Date
2.	System Power Factor for Billing Period
3.	Cumulative Energy – kWh
4.	Cumulative Energy – kWh - TOD Zone A (TZ1)
5.	Cumulative Energy – kWh - TOD Zone B (TZ2)
6.	Cumulative Energy – kWh - TOD Zone C (TZ3)
7.	Cumulative Energy – kWh - TOD Zone D (TZ4)
8.	Cumulative Energy – kVArh – Lag
9.	Cumulative Energy – kVArh - Lag- TOD Zone A (TZ1)
10.	Cumulative Energy – kVArh - Lag- TOD Zone B (TZ2)
11.	Cumulative Energy – kVArh - Lag- TOD Zone C (TZ3)

12.	Cumulative Energy – kVArh - Lag- TOD Zone D (TZ4)
13.	Cumulative Energy – kVArh – Lead
14.	Cumulative Energy – kVArh - Lead- TOD Zone A (TZ1)
15.	Cumulative Energy – kVArh - Lead- TOD Zone B (TZ2)
16.	Cumulative Energy – kVArh - Lead- TOD Zone C (TZ3)
17.	Cumulative Energy – kVArh - Lead- TOD Zone D (TZ4)
18.	Cumulative Energy – kVAh
19.	Cumulative Energy – kVAh - TOD Zone A (TZ1)
20.	Cumulative Energy – kVAh – TOD Zone B (TZ2)
21.	Cumulative Energy – kVAh – TOD Zone C (TZ3)
22.	Cumulative Energy – kVAh – TOD Zone D (TZ4)
23.	MD – kVA with occurance date & time
24.	MD – kVA – TOD Zone A (TZ1) with occurance date & time
25.	MD – kVA – TOD Zone B (TZ2) with occurance date & time
26.	MD – kVA – TOD Zone C (TZ3) with occurance date & time
27.	MD – kVA – TOD Zone D (TZ4) with occurance date & time
28.	MD – kW occurance date & time
29.	MD – kW – TOD Zone A (TZ1) with occurance date & time
30.	MD – kW – TOD Zone B (TZ2) with occurance date & time
31.	MD – kW – TOD Zone C (TZ3) with occurance date & time
32.	MD – kW – TOD Zone D (TZ4) with occurance date & time

13.02 BILLING HISTORY

The meter shall have sufficient non-volatile memory for recording history of billing parameters for last 12 months.

13.03 BLOCK LOAD SURVEY

The Block Load survey data shall be logged on non time based basis, i.e. if there is no power for more than 24 hours the day shall not be recorded, however if there is no power for few block within one day those block should be displayed with 0 values with marking of power fail indication for that block i.e. for every day when there was power on, the meter must record 48 blocks. Whenever meter is taken out and brought to laboratory, the load survey data shall be retained for the period of actual use of meter. This load survey data can be retrieved as and when desired and load profiles shall be viewed graphically / analytically with the help of meter application software. The meter application software shall be capable of exporting / transmitting these data for analysis to other user software in spreadsheet (excel) format.

The Block Load survey data shall be for specified parameters as per table 28 (except 8 & 9) for 3Φ/4W system of measurement with NEUTRAL as reference point of Annex E of IS: 15959 / 2011. The specified parameters are as below.

Sr. No.	**Parameters**
1.	Real Time Clock – Date and Time
2.	Current - I_R
3.	Current – I_Y
4.	Current – I_B
5.	Voltage – V_{RN}
6.	Voltage – V_{YN}
7.	Voltage – V_{BN}
8.	Block Energy – kWh
9.	Block Energy – kVArh – Lag
10.	Block Energy – kVArh – Lead
11.	Block Energy – kVAh

14.00 DEMONSTRATION

The purchaser reserves the right to ask to give the demonstration of the equipment offered at the purchaser's place.

15.00 PERFORMANCE UNDER INFLUENCE QUANTITIES

The meters performance under influence quantities shall be governed by IS: 14697 / 1999 (amended upto date) and CBIP Tech. Report 325. The accuracy of meter shall not exceed the permissible limits of accuracy as per standard IS: 14697 / 1999 (amended upto date). In case of conflict, the priority shall be as per clause no. 5.00 of this specification.

16.00 HAND HELD UNIT (HHU)

16.01 To enable local reading of meters data, a DLMS compliant HHU shall be provided.

16.02 The HHU shall be as per specification given in Annex J of IS: 15959 / 2011.

16.03 It shall be compatible to the DLMS compliant energy meters that are to be procured / supplied on the basis of this specification.

16.04 The HHU shall be supplied by the meter manufacturer along with the meter free of cost in the ratio of one for each 250 Nos. meters supplied including user manual and a set of direct communication cords for data downloading to the Laptop or PC for each HHU and communication cord for downloading data from optical port to HHU shall be provided.

16.05 There shall be a provision for auto power save on HHU, which shall force the instrument in the power saving mode in case of no-activity within 5 minutes. The data shall not be lost in the event the batteries are drained or removed from the HHU.

16.06 The HHU shall have a memory capacity of 512 MB SRAM (Static RAM) with battery backup & upgradeable and BIOS / OS on FLASH / EEPROM Memory of 256 KB (RAM-512 MB, FLASH-2GB, SD Card- 8GB with USB facility.

16.07 The manufacturer / supplier shall modify the compatibility of HHU with the meter and the base computer system due to any change in language or any other reasons at their own cost within guarantee period.

16.08 The HHU shall be type tested for (a) Tests of Mechanical requirement such as Free fall test, Shock Test, Vibration test, (b) Tests of Climatic influences such as Tests of Protection against Penetration of Dust and Water (IP 6X), Dry Heat test, Cold Test, Damp Heat Cyclic Test, (c) Tests

for Electromagnetic Compatibility (EMC), (d) Test of Immunity to Electromagnetic HF Fields and (e) Radio Interference Measurement.

16.09 The equipments offered shall be fully type tested at approved laboratory by National Accreditation Board for Testing and Calibration Laboratories (NABL) as per relevant standards within last 5 years from the date of opening of tender & the type test reports shall be enclosed with the offer.

17.00 COMPUTER SOFTWARE.

17.01 For efficient and speedy recovery of data downloaded through HHU on base computer, licensed copies of base computer software shall have to be supplied free of cost. This software will be used at number of places up to Division level. As many copies of base computer software as required up to Division level shall be provided by Supplier.

17.02 The meter shall be capable to communicate directly with laptop computer. Base Computer Software shall be suitable for all types of printers such as dot matrix, inkjet, deskjet and laser printers.

17.03 The Base Computer Software shall be "Windows" based & user friendly.The data transfer shall be highly reliable and fraud proof (No editing shall be possible on base computer as well as HHU by any means). The software shall have capability to convert all the data into ASCII format/XML format as per MIOS.

17.04 The Base Computer Software should be password protected.

17.05 The total time taken for downloading Billing, Tamper and Load Survey Data for 32 days shall be less than or equal to 9 minutes.

17.06 Downloading time of only Billing data shall be less than or equal to 20 secs.

17.07 The BCS software shall create one single file for the uploaded data, e.g. if CMRI contains the meter readings of, say, 2,000 consumer meters and the said data is uploaded to BCS, then the BCS shall create a single file containing separate records for each consumer meter reading in ASCII format or XML file as per MIOS for individual meter reading.

17.08 Meter manufacturers should also need to submit Convert API (API3) as per MIOS universal standard along with Base Computer System free of cost. This API should capable of converting both data i.e. AMR data collected from Read API (API1) and MRI data collected from CMRI.

17.09 Also there shall be a provision to give filenames while creating the file.

17.10 As and when the meter manufacturer releases new or latest or advanced versions of meter hardware / firmware / software (such as

Base Computer System, API3 etc), the same shall be made available to purchaser immediately on the release date free of cost. The latest version shall support all existing hardware / meters in the field. The meter manufacturer should also provide support for changes and integration of Base Computer System and API3

17.11 The meter samples shall be tested by our IT Department for the time required for downloading the data as per specifications and as confirmed by the bidder.

17.12 Downloading software shall also be provided so as to install on our Laptop for downloading data directly on Laptop from meter without the use of HHU.

17.13 The software provided on laptop or PC shall be compatible to read the data from USB drive and for that purpose a sample cable (1 No.) shall be provided with USB termination. USB being the de-facto standard, this is the requirement.

17.14 MSEDCL is procuring large quantity of meters. As such manufacturer have to depute Hardware Engineers and Software Engineers on call basis, who shall have thorough knowledge of meter hardware / software used for downloading and converting so as to discuss the problems, if any, or new development in the hardware / software with Chief Engineer, Testing & Quality Control Cell / Chief General Manager (IT), MSEDCL, Prakashgad, Bandra (E), Mumbai – 400051 without any additional charge.

18.00 CONNECTION DIAGRAM AND TERMINAL MARKINGS

The connection diagram of the meter shall be clearly shown on inside portion of the terminal cover and shall be of permanent nature. Meter terminals shall also be marked and this marking shall appear in the above diagram. The diagram & terminal marking on sticker shall not be allowed.

19.00 NAME PLATE AND MARKING OF METERS

Meter shall have a name plate clearly visible, effectively secured against removal and indelibly and distinctly marked with all essential particulars as per relevant standards. Meter Serial Number shall be Bar Coded along with numeric number. The size of bar coded number shall not be less than 35x5 mm. The manufacturer's meter constant shall be marked on the name plate. Meter serial number & bar code on sticker will not be allowed.

The meter shall also store name plate details as given in the table 30 of Annex F of IS: 15959 / 2011. These shall be readable as a profile as

and when required.

In addition to the requirement as per IS, following shall be marked on the name plate.

(i) Purchase order no. & date

(ii) Month and Year of manufacture

(iii) Name of purchaser, i.e. MSEDCL

(iv) Guarantee Five Years

(v) ISI mark

(vi) Category of Meter: **Category C1 – HT (PT / CT) Consumer Meter**. The lettering shall be bold in 3 mm font.

20.00 TESTS

20.01 TYPE TESTS

The meter offered shall have successfully passed all the type tests described in IS: 14697 / 1999 (amended upto date), external AC / DC / permanent magnetic influence tests as per CBIP Tech Report 325 with latest amendments and this specification and the meter Data Transfer and Communication capability as per IS: 15959 / 2011.

The type test reports shall clearly indicate the constructional features of the type tested meter. Separate type test reports for each offered type of meter shall be submitted.

The type test certificates as per IS: 14697 / 1999 (amended upto date) shall be submitted along with the offer. The type test certificate carried out during last three years from the date of opening the tender shall be valid. The Type test certificate of metering protocol as per IS: 15959 / 2011 amended upto date shall be submitted alongwith the offer and the same shall not be more than 36 months old at the time of submission.

All the type test reports shall be got approved from the Chief Engineer, MSEDCL, Testing & Quality Control Cell, Prakashgad, Mumbai.

All the Type Tests specified in the technical specifications shall be carried out at laboratories which are accredited by the National Board of Testing and Calibration Laboratories (NABL) of Govt. of India such as ERDA, ERTL, CPRI, etc. Type Test Reports conducted in manufacturers own laboratory and certified by testing institute shall not be acceptable.

Further Purchaser shall reserve the right to pick up energy meters at random from the lots offered and get the meter tested at third party lab i.e. CPRI / agencies listed at Appendix - C of Latest – standardization of AC static electrical energy meters – CBIP publication No. 325 / NPL /

CQAL / ERTL / ERDA at the sole discretion of the purchaser at the purchaser's cost. The supplier shall have no right to contest the test results of the third party lab or for additional test and has to replace / take corrective action at the cost of the supplier. For this purpose, the tenderer shall quote unit rates for carrying out each type test. However, such unit rates will not be considered for evaluation of the offer.

Make & type of major components used in the type-tested meter shall be indicated in the QAP.

20.02 ACCEPTANCE TESTS

Criteria for selection for such tests and performance requirements shall be as per IS: 14697 / 1999 (reaffirmed 2004).

ALL acceptance tests as per IS: 14697 / 1999 shall be carried out on the meter.

All acceptance tests as per IS: 11731 (Part-2)/ 1986 shall be carried out on the meter body, heat deflection test as per ISO:75, glow wire test as per the IS:11000 (part 2/SEC-1) 1984 OR IEC PUB 60695-2-12, Ball pressure test as per IEC--60695-10-2 and Flammability Test as per UL 94 or as per IS: 11731 (Part-2)/ 1986.

20.03 ROUTINE TESTS

All routine tests as per IS: 14697 / 1999 shall be carried out on all the meters.

20.04 ADDITIONAL ACCEPTANCE TESTS

The following additional tests shall be carried out in addition to the acceptance tests specified in IS: 14697 / 1999 (amended up to date)

(a) **TRANSPORTATION TEST**

At least 50% of the samples of the meters be tested for error at I_{max}, I_b and 5% I_b at unity power factor and 50% I_{max} and 10% I_b at 0.5 lagging Power Factor besides checking them for starting current. This test shall be conducted on ready to install meter i.e. meter cover ultrasonically welded & sealed. After recording these errors, the meters be put in their normal packing and transported for at least 50 km in any transport vehicle such as pick up van, Jeep, etc. on uneven rural roads and then re-tested at all these loads after the transportation. The variation in errors recorded before and after transportation shall not exceed 1% at higher loads and 1.5% at loads below Ib.

(b) **OTHER ACCEPTANCE TESTS**

i) Meters shall be tested for tamper conditions as stated in this specification.

ii) Glow wire testing for poly-carbonate body.

iii) Power consumption tests shall be carried out.

iv) The meter shall comply all the tests for external AC / DC magnetic field as per CBIP Tech Report 325 with latest amendments. Moreover, the magnetic influence test for permanent magnet of 0.5 T for minimum period of 15 minutes shall be carried out by putting the magnet on the meter body. If, during the test, the accuracy of the meter gets affected, then the same shall be recorded as magnetic tamper event with date & time stamping and the meter shall record energy considering Imax and reference voltage at unity power factor in all the three phases. After removal of magnet, meter shall be subjected to accuracy test as per IS: 14697 / 1999 (amended upto date). No deviation in error is allowed in the class index as per IS: 14697 / 1999 (amended upto date) & this specification.

v) The meter shall withstand impulse voltage at 10 kV.

vi) The meter shall remain immune for the test of electromagnetic HF/RF defined under the test no. 4.0 for EMI/EMC of IS 14697:1999 amended up to date.

Jammer test for sample meters shall be carried out at MSEDCL's Testing Division.

The tests 20.04 (b) (i) to (iii) shall be carried out at factory for each inspected lot at the time of pre dispatch inspection.

The tests 20.04 (b) (iv) to (vi) shall be carried out on one sample from first lot as per procedure laid down in IS: 14697 / 1999 (amended up to date), CBIP Tech Report 325 (with latest amendments) at Third party NABL Accredited lab . The test report shall be got approved from Chief Engineer, Testing & Quality Control Cell before commencement of supply.

(i) For influence quantities like, voltage variation, frequency variation, voltage unbalance etc. the limits of variation in percentage error shall be as per IS: 14697 / 1999 (amended up to date).

21.00 GUARANTEED TECHNICAL PARTICULARS

The tenderer shall furnish the particulars giving specific required details of meters in schedule 'A' attached. The offers without the details in Schedule 'A' stand rejected.

22.00 PRE-DESPATCH INSPECTIONS

All Acceptance tests and inspection shall be carried out at the place of manufacturer unless otherwise specially agreed upon by the manufacturer and purchaser at the time of purchases. The manufacturer shall offer to the inspector representing the purchaser all the reasonable facilities, free of charge, for inspection and testing, to satisfy him that the material is being supplied in accordance with this specification.

The MSEDCL's representative / Engineer attending the above testing will carry out testing as per IS: 14697 / 1999 & this specification and issue test certificate approval to the manufacturer and give clearance for dispatch.

The first lot of meter may be jointly inspected by the Executive Engineer, Testing Division & the Executive Engineer, Inspection Wing.

23.00 JOINT INSPECTION AFTER RECEIPT AT STORES (Random Sample Testing)

From each lot (lot means the total number of meters received in a Store out of inspected and approved lot by E.E.(IW) or purchaser's representative under one approval letter) of meters received at Stores, 5 sample meters shall be drawn (meters received in damage condition shall not be selected as samples) and these meters will be tested by our Testing Engineer in presence of Supplier's representative jointly for (i) no load condition test, (ii) limits of error test (iii) starting current test, (iv) repeatability of error test (v) tamper conditions and (vi) data downloading time as per this specification.

The 5 days advance intimation will be given to the supplier and if the suppliers fail to attend the joint inspection on the date informed, the Testing will be carried out by our Testing Engineer in absence of supplier's representative. If the meters failed in above random sample testing, the lot will be rejected.

24.00 GUARANTEE

The meter & HHU supplied shall be guaranteed for a period of 66 months from the date of supply or 60 months from the date of commissioning, whichever is earlier. Bidders shall guarantee to replace free of cost the meters which are found defective / inoperative at the

time of installation, or become inoperative / defective during guarantee period. Replacements shall be effected within one month from the date of intimation. If the defective meters are not replaced within the specified period above, MSEDCL shall recover an equivalent amount plus 15% supervision charges from any of the bills of the supplier.

25.00 PACKING

25.01 The meters & HHUs shall be suitably packed in order to avoid damage or disturbance during transit or handling. Each meter & HHU may be suitably packed in the first instance to prevent ingress of moisture and dust and then placed in a cushioned carton of a suitable material to prevent damage due to shocks during transit. The lid of the carton may be suitably sealed. A suitable number of sealed cartons may be packed in a case of adequate strength with extra cushioning, if considered necessary. The cases may then be properly sealed against accidental opening in transit. The packing cases may be marked to indicate the fragile nature of the contents.

25.02 The following information shall be furnished with the consignment:

- Name of the consignee
- Details of consignment
- Destination
- Total weight of the consignment
- Sign showing upper / lower side of the crate
- Sign showing fragility of the material
- Handling and unpacking instructions
- Bill of Materials indicating contents of each package & spare material.

26.00 TENDER SAMPLE

Tenderer are required to submit 15 (Fifteen) nos. of sample meters and 1 (One) no. of sample HHU of offered type / item as per technical specifications from any one of the factories on or before the time & date stipulated for submission of offer for testing the sample meters in third party NABL Lab like ERDA, CPRI, CIPET, ERTL, etc. The offer of those eligible bidders shall only be considered if the sample passes the tests at NABL Lab. The results of NABL Lab shall not be disputed and same shall be binding on the bidder. The required information such as Manufacturer's Name or Trade Name, Sr. No., ISI Certification No., etc. shall be on stickers to be affixed on outer portion of sample meters

being submitted along with the offer. Such information shall not be embossed or printed on any part of the sample meter.

Out of these, two samples shall be without Ultrasonic welding to confirm constructional features.

27.00 QUALITY CONTROL

The purchaser shall send a team of experienced engineers for assessing the capability of the firm for manufacturing of meters as per this specification. The team should be given all assistance and co-operation for inspection and testing at the bidder's works.3 tender samples should be kept ready for assessing and testing. The tenderer has to give all facilities for carrying out the testing of these samples.

28.00 MINIMUM TESTING FACILITIES

28.01 Manufacturer shall posses fully computerized Meter Test Bench System for carrying out routine and acceptance Tests as per IS: 14697 / 1999 (amended up to date). In addition, this facility shall produce Test Reports for each and every meter. The bidder shall have fully automatic Test Bench having in-built constant voltage, current and frequency source with facility to select various loads automatically and print the errors directly. The list of testing equipments shall be enclosed. The manufacturer shall have the necessary minimum testing facilities for carrying out the following tests:

Sr. No.	Name of Test
(1)	A.C. Voltage test
(2)	Insulation Resistance Test
(3)	Test of Accuracy Requirement
(4)	Test on limits of errors
(5)	Test on meter constant
(6)	Test of starting condition
(7)	Test of no-load condition
(8)	Repeatability of error test
(9)	Test of power Consumption
(10)	Vibration test
(11)	Shock Test

(12)	Transportation Test - as per MSEDCL specification
(13)	Tamper conditions - as per MSEDCL specification
(14)	Glow Wire Test
(15)	Long duration test
(16)	Flammability Test
(17)	The manufacturer shall have duly calibrated RSS meter of class 0.01 accuracy

28.02 METER SOFTWARE

The Bidders will have to get appraised & obtain CMMI – Level III within one year from date of letter of award.

28.03 Notwithstanding anything stated herein under, the Purchaser reserves the right to assess the capacity and capability of the bidder to execute the work, shall the circumstances warrant such assessment in the overall interest of the Purchaser.

29.00 MANUFACTURING PROCESS, ASSEMBLY, TESTING

29.01 Meters shall be manufactured using latest and 'state of the art' technology and methods prevalent in electronics industry. The meter shall be made from high accuracy and reliable surface mount technology (SMT) components. All inward flow of major components and sub assembly parts (CT, PT, RTCs / Crystal, LCDs, LEDs, power circuit electronic components, etc.) shall have batch and source identification. Multilayer 'PCB' assembly with 'PTH' (Plated through Hole) using surface mounted component shall have adequate track clearance for power circuits. SMT component shall be assembled using automatic 'pick-and-place' machines, Reflow Soldering oven, for stabilized setting of the components on 'PCB'. For soldered PCBs, cleaning and washing of cards, after wave soldering process is to be carried out as a standard practice. Assembly line of the manufacturing system shall have provision for testing of sub-assembled cards. Manual placing of components and soldering, to be minimized to items, which cannot be handled by automatic machine. Handling of 'PCB' with ICs / C-MOS components, to be restricted to bare minimum and precautions to prevent 'ESD' failure to be provided. Complete assembled and soldered PCB shall undergo functional testing using computerized Automatic Test Equipment.

Test points shall be provided to check the performance of each block / stage of the meter circuitry. RTC shall be synchronized with NPL time at

the time of manufacture. Meters testing at intermediate and final stage shall be carried out with testing instruments, duly calibrated with reference standard, with traceability of source and date.

The manufacturer shall submit the list of plant and machinery along with the offer.

29.02 MANUFACTURING ACTIVITIES

Quality shall be ensured at the following stages:

(a) At PCB manufacturing stage each board shall be subjected to computerized bare board testing.

(b) At insertion stage all components should under go computerized testing for conforming to design parameters and orientation.

(c) Complete assembled and soldered PCB should under go functional testing using Automatic Test Equipments (ATEs)

(d) Prior to final testing and calibration, all meters shall be subjected to ageing test (i.e. Meters shall be kept in ovens for 72 hours at 55^0C temperature and atmospheric humidity under real life condition at it's full load current. After 72 hours meters shall work satisfactory to eliminate infant mortality.

(e) The calibration of meters shall be done in-house.

(f) The bidders shall submit the list of all imported & indigenous components separately used in meter along with the offer.

(g) Bought out items: A detailed list of bought out items which are used in the manufacture of the meter shall be furnished indicating the name of firms from whom these items are procured. The bidder shall also give the details of quality assurance procedures followed by him in respect of the bought out items.

(h) List of Plant and Machinery:

Sr. No.	List of Plant and Machinery used for Energy meter Production	
1	Fully automatic testing Bench with ICT for testing link less meters	Routine Testing and Calibration of Meters
2	Semi automatic testing Bench with MSVT	Routine Testing and Calibration of Meters
3	IR Tester	Insulation testing

4	HV Tester	Insulation testing
5	Error calculators	Error testing
6	Long duration Running test set ups	Reliability Testing
7	Reference Meters Class 0.1 accuracy	Error calculation
8	Ultrasonic welding Machines	Welding of meters
9	Automatic Pick and Place Machines	Automatic placing of SMT components
10	Solder Paste Printing Machine	SMT soldering
11	Soldering Furnace IR reflow	SMT soldering
12	PCB Scanner	For testing of PCBs
13	ATE functional tester	For testing of Components
14	Programmers and Program Loaders	Chip Programming Tools
15	CAD PCB designing setups	PCB designing
16	Furnace IR type for Hybrid Micro Circuits	resistance network and HMC manufacturing
17	Laser Trimming Machines	trimming of resistances for higher accuracy measurement
18	Wave Soldering Machines	Wave soldering of PCBs
19	Humidity Chamber	Accelerated testing for Life cycle
20	Dry Heat Test Chamber	Accelerated testing for Life cycle
21	Thermal Shock Chamber	Accelerated testing for Life cycle
22	PRO - E Mechanical Design Stations	Mechanical CAD stations
23	Spark Erosion Tool fabricating Machine	Tool fabrication and Die manufacturing
24	CNC wire Cut Tool Fabrication machine	Tool fabrication and Die manufacturing
25	CNC Milling Machine for	Tool fabrication and Die

	composite tool fabrication	manufacturing
26	Injection Moulding Machine	Moulding of plastic parts
27	Vibration testing Machine	Vibration testing of Meters
28	Glow Wire Test machine	Testing of Plastic Material
29	Fast transient burst testing setup	Type testing of Meters
30	Short term over Current testing setup	Type testing of Meters
31	Magnetic and other tamper testing setups	Tamper Testing
32	Impulse Voltage Testing Setup	Type testing of Meters
33	Composite Environmental testing chambers	Type testing of Meters

30.00 QUALITY ASSURANCE PLAN

30.01 The tenderer shall invariably furnish QAP as specified in Annexure I along with his offer. The QAP shall be adopted by him in the process of manufacturing.

30.02 Precautions taken for ensuring usage of quality raw material and sub component shall be stated in QAP.

31.00 COMPONENT SPECIFICATION.

As per Annexure II enclosed.

32.00 SCHEDULES.

The tenderer shall fill in the following schedules, which are part and partial of the tender specification and offer. If the schedules are not submitted duly filled in with the offer, the offer shall be liable for rejection.

Schedule 'A' … Guaranteed and technical particulars. (As per GTP uploaded on e -tendering site)

The discrepancies if any between the specification and the catalogs and / or literatures submitted as part of the offer by the bidders, the same shall not be considered and representations in this regard shall not be entertained. If it is observed that there are deviations in the offer in Guaranteed Technical Particulars, then, such deviations shall be treated as deviations.

ANNEXURE I

QUALITY ASSURANCE PLAN

A) The bidder shall invariably furnish the following information along with his bid, failing which his bid shall be liable for rejection. Information shall be separately given for individual type of material offered.

i) Statement giving list of important raw materials, names of sub-suppliers for the raw materials, list of standards according to which the raw materials are tested. List of test normally carried out on raw materials in presence of Bidder's representative, copies of test certificates:

ii) Information and copies of test certificates as in (i) above in respect of bought out accessories.

iii) List of manufacturing facilities available.

iv) Level of automation achieved and list of areas where manual processing exists.

v) List of areas in manufacturing process, where stage inspections are normally carried out for quality control and details of such tests and inspections.

vi) List of testing equipment available with the bidder for final testing of equipment specified and test plan limitation. If any, vis-a-vis the type, special acceptance and routine tests specified in the relevant standards. These limitations shall be very clearly bought out in schedule of deviation from specified test requirements.

B) The successful bidder shall within 30 days of placement of order, submit following information to the purchaser.

i) List of raw materials as well as bought out accessories and the names of sub-suppliers selected from those furnished along with offers.

ii) Type test certificates of the raw materials and bought out accessories if required by the purchaser.

iii) Quality assurance plan (QAP) with hold points for purchaser's inspection.

The quality assurance plan and purchasers hold points shall be discussed between the purchaser and bidder before the QAP is finalized.

C) The contractor shall operate systems which implement the following:

i) Hold point: A stage in the material procurement or workmanship process beyond which work shall not proceed without the documental approval of designated individuals organizations. The purchaser's written approval is required to authorise work to progress beyond the hold points indicated in quality assurance plans.

ii) Notification point: A stage in the material procurement or workmanship process for which advance notice of the activity is required to facilitate witness. If the purchaser does not attend after receiving documented notification in accordance with the agreed procedures and with the correct period of notice then work may proceed.

D) The successful bidder shall submit the routine test certificates of bought out accessories and central excise passes for raw material at the time of routine testing if required by the purchaser and ensure that Quality Assurance program of the contractor shall consist of the quality systems and quality plans with the following details.

i) The structure of the organization.

- The duties and responsibilities assigned to staff ensuring quality of work.
- The system for purchasing taking delivery and verification of material.
- The system for ensuring quality workmanship.
- The system for retention of records.
- The arrangements for contractor's internal auditing.

A list of administration and work procedures required to achieve and verify contract's quality requirements these procedures shall be made readily available to the project manager for inspection on request.

ii) Quality Plans:

- An outline of the proposed work and programme sequence. The structure of the contractor's organization for the contract.
- The duties and responsibilities assigned to staff ensuring quality of work.
- Hold and notification points.
- Submission of engineering documents required by the specification.
- The inspection of materials and components on receipt. Reference to the contractor's work procedures appropriate to each activity.
- Inspection during fabrication/ construction.
- Final inspection and test.

ANNEXURE II

COMPONENT SPECIFICATION

The make/grade and the range of the components should be from the following list makes or equivalent reputed makes

Sr. No.	Component function	Requirement	Makes and Origin
1	Current Transformers	The Meters shall be with the current transformers as measuring elements.	The current transformer shall withstand for the clauses under 5 & 9 of IS: 14697 / 1999
2	Measurement or computing chips	The measurement or computing chips used in the Meter shall be with the Surface mount type along with the ASICs.	**USA:** Analog Devices, Cyrus Logic, Atmel, Philips, Teridian. Dallas, ST, Texas Instruments, Motorola, Maxim, National Semiconductors, Freescale, Onsemiconductors **Germany:** Siemens. **South Africa:** SAMES. **Japan:** NEC, Toshiba, Renasas, Hitachi. **Austria:** AMS **Holland:** Philips (N X P) **Taiwan:** Prolific
3	Memory chips	The memory chips shall not be affected by external parameters like sparking, high voltage spikes or electrostatic discharges. There shall be security isolation between metering circuit, communication circuit, and power circuit.	**USA:** Atmel, Teridian, Philips ST, National Semiconductors, Texas Instruments, Microchip, Spanson (Fujitsu), Ramtron. **Japan:** Hitachi, Renasas.

			Germany: Siemens
4	Display modules	a) The display modules shall be well protected from the external UV radiations. b) The display visibility shall be sufficient to read the Meter mounted at height of 0.5 meter as well as at the height of 2 meters. c) The construction of the modules shall be such that the displayed quantity shall not disturbed with the life of display (PIN Type). d) It shall be trans-reflective HTN (Hyper Twisted Nematic (120°)) or STN (Super Twisted Nematic (160°)) type industrial grade with extended temperature range.	Display TEK/KCE/RCL Display /Suzhou heng Xiamen instruments/ Veritronics **Singapore:** E-smart, Bonafied Technologies, Display Tech, **Korea:** Advantek, Jebon, Union Display Inc., **Japan:** Hitachi, Tianma, Sony, L&G, Holtek, Haijing. **Malaysia:** Crystal Clear Technology. **Hong kong:** Genda **China:** Success, Tianma
5	Communication Modules	Communication modules shall be compatible for the two ports (one optical port for communication with meter reading instruments & the other hardwired RS 232 port to communicate with various modems for AMR)	**USA:** HP, Optonica, National Semiconductors, **Holland/Korea:** Phillips **Japan:** Hitachi **Taiwan:** Ligitek
6	Optical port	Optical port shall be used to transfer the meter data to meter reading instrument. The mechanical construction of the port shall be such to facilitate the data transfer easily.	**USA:** HP, National Semiconductors, Maxim **Holland/Korea:** Phillips **Japan:** Hitachi **Taiwan:** Ligitek

7	Power supply	The power supply shall be with the Capabilities as per the relevant standards. The power supply unit of the meter shall not be affected in case the maximum voltage of the system appears to the terminals due to faults or due to wrong connections	SMPS Type
8	Electronic components	The active & passive components shall be of the surface mount type & are to be handled & soldered by the state of art assembly processes.	**USA:** National Semiconductors, Atmel, Philips, Texas Instruments, BC Component Analog devices, ST, Maxim, Siemens, PHYCOMP, YAGEO, DRALORIC, KOA, WELWYN, OSRAM, Kemet Onsemiconductors, Freescale, Intersil, Raltron, Fairchild, Muruta, Agilent, AVX, Abracon, Sipex, Diode Inc., Honeywell, Power Integration, Fox, Roham **Japan:** Hitachi, Oki, AVZ or Ricon, Toshiba, Epson, Kemet, Alps, Muruta, TDK, Sanyo, Samsung, Panasonic **India:** Keltron, Incap, VEPL, PEC, RMC, Gujarat Polyavx, Prismatic, MFR Electronic components Pvt. Ltd., Cermet, CTR. **Korea:** Samsung **Germany:** Vishay,

			Epcos, Diotech, Kemet, Infineon **Taiwan:** Yageo.
9	Mechanical parts	(i) The internal electrical components shall be of electrolytic copper & shall be protected from corrosion, rust etc. (ii) The other mechanical components shall be protected from rust, corrosion etc. by suitable plating / painting methods.	
10	Battery	Chargeable maintenance free guaranteed life of 10 years.	**USA:** Maxell, Renata **Japan:** Panasonic, Sony, Mitsubishi, Sanyo **Germany:** Varta, Tedirum **France:** Saft **Korea:** Tekcell, Vitzrocell
11	RTC & Micro controller.	The accuracy of RTC shall be as per relevant IEC / IS standards.	**USA:** Philips, Dallas Atmel, Motorola, Microchip, Epson, ST, Teridian **Japan:** NEC or Oki.
12	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm.	

ANNEXURE – III

MSEDCL DEFINED OBIS CODES FOR PARAMETERS NOT PRESENT IN IS 15959/2011

NO.	PARAMETERS	OBIS Code						Interface Class No./ Attribute
		A	B	C	D	E	F	
1.	Cumulative Energy – kVArh - Lag- TOD Zone A (TZ1)	1	0	5	8	1	255	3/2
2.	Cumulative Energy – kVArh - Lag- TOD Zone B (TZ2)	1	0	5	8	2	255	3/2
3.	Cumulative Energy – kVArh - Lag- TOD Zone C (TZ3)	1	0	5	8	3	255	3/2
4.	Cumulative Energy – kVArh - Lag- TOD Zone D (TZ4)	1	0	5	8	4	255	3/2
5.	Cumulative Energy – kVArh - Lead- TOD Zone A (TZ1)	1	0	8	8	1	255	3/2
6.	Cumulative Energy – kVArh - Lead- TOD Zone B (TZ2)	1	0	8	8	2	255	3/2
7.	Cumulative Energy – kVArh - Lead- TOD Zone C (TZ3)	1	0	8	8	3	255	3/2
8.	Cumulative Energy – kVArh - Lead- TOD Zone D (TZ4)	1	0	8	8	4	255	3/2

SCHEDULE 'A'

GUARANTEED TECHNICAL PARTICULARS (TO BE FILLED ONLINE)

ITEM NAME	**THREE PHASE FOUR WIRE CT / PT OPERATED 5 AMPS OR 1 AMPS FULLY STATIC AMR COMPATIBLE TOD TRI - VECTOR ENERGY METERS AS PER CATEGORY "C1" OF ICS FOR USE ON HT CONSUMER INSTALLATIONS**	
SR. NO.	**GTP PARAMETERS**	**GTP VALUES**
1.	MANUFACTURER'S / SUPPLIER'S NAME AND ADDRESS WITH WORKS ADDRESS	TO BE FILLED BY MANUFACTURER
2.	MAKE AND TYPE OF METER	TO BE FILLED BY MANUFACTURER
3.	APPLICABLE STANDARD IS AS PER IS: 14697 /1999 (AMENDED UPTO DATE), IS: 15959 / 2011, CBIP TECH REPORT 325 AMENDED UP TO DATE, IS: 15707 / 2006 (YES/NO)	YES
4.	METER BEARS ISI MARK (YES/NO)	YES
5.	FREQUENCY	50 HZ ±5%
6.	ACCURACY CLASS OF METER	0.2S (FOR ACTIVE AND REACTIVE ENERGY)
7.	PT SECONDARY VOLTAGE	63.5 V PH-N
8.	RATED VOLTAGE	110 V PH-PH OR 3 X 63.5 V PH-N
9.	VOLTAGE RANGE	+15% TO – 30% OF RATED VOLTAGE
10.	BASIC CURRENT (IB) OF METER	1 AMP; 5 AMPS.
11.	MAXIMUM CONTINUOUS CURRENT (IMAX)	2 TIMES (200 %) OF IB.
12.	SHORT TIME OVER CURRENT	AS PER IS: 14697

		/ 1999.
13.	STARTING CURRENT OF METER	0.1% OF IB.
14.	CT RATIO OF METER	1 / 1 AMPS; 5 / 5 AMPS
15.	POWER CONSUMPTION IN EACH VOLTAGE CIRCUIT	SHALL NOT EXCEED 1.0 W AND 4 VA
16.	POWER CONSUMPTION IN EACH CURRENT CIRCUIT	SHALL NOT EXCEED 2 VA
17.	POWER FACTOR	ZERO LAG TO UNITY TO ZERO LEAD TO UNITY
18.	POWER SUPPLY IS SMPS & MICRO CONTROL TYPE (YES/NO)	YES
19.	STANDARD REFERENCE TEMPERATURE OF METER	27^0 C
20.	MEAN TEMPERATURE CO-EFFICIENT	SHALL NOT EXCEED 0.03%.
21.	KVA MD PROVIDED (YES/NO)	YES
22.	OPAQUE METER BASE & TRANSPARENT TOP COVER IS MADE OUT OF, UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE MATERIAL SO AS TO GIVE IT AND QUALITIES. (YES/NO)	YES
23.	POLY CARBONATE BODY OF METER CONFORMS TO IS: 11731 (FV-2 CATEGORY) (YES/NO)	YES
24.	POLY CARBONATE BODY MEETS TEST REQUIREMENT OF (a) HEAT DEFLECTION TEST AS PER ISO 75 > 150^0C (YES/NO)	YES
25.	(b) GLOW WIRE TEST AS PER IS: 11000 (PART 2/SEC-1) 1984 OR IEC PUB 60695-2-12 AT 900^0C (YES/NO)	YES

26.	(c) BALL PRESSURE TEST AS PER IEC--60695-10-2 (YES/NO)	YES
27.	(d) FLAMMABILITY TEST AS PER UL 94 OR IS 11731 (PART-2) 1986 (YES/NO)	YES
28.	TYPE TEST REPORT NOS. & DATE OF ABOVE (A) TO (D)	TO BE FILLED BY MANUFACTURER
29.	PHYSICAL WATER ABSORPTION VALUE OF METER BODY	TO BE FILLED BY MANUFACTURER
30.	THERMAL HDDT VALUE OF METER BODY	TO BE FILLED BY MANUFACTURER
31.	TENSILE STRENGTH OF METER BODY	TO BE FILLED BY MANUFACTURER
32.	FLEXURE STRENGTH OF METER BODY	TO BE FILLED BY MANUFACTURER
33.	MODULUS OF ELASTICITY OF METER BODY	TO BE FILLED BY MANUFACTURER
34.	IZOD IMPACT STRENGTH OF METER BODY NOTCHED AT 23°C	TO BE FILLED BY MANUFACTURER
35.	POLY-CARBONATE OPAQUE BASE AND TRANSPARENT TOP COVER IS ULTRA-SONICALLY WELDED (CONTINUOUS WELDING) (YES/NO)	YES
36.	THICKNESS OF MATERIAL FOR METER COVER & BASE	2 MM MINIMUM
37.	METER BODY TYPE TESTED FOR IP51 DEGREE OF PROTECTION AS PER IS: 12063 AGAINST INGRESS OF DUST, MOISTURE & VERMIN. (YES/NO)	YES
38.	IP51 DEGREE OF PROTECTION AS PER IS: 12063 TEST CERTIFICATE NO. & DATE	TO BE FILLED BY MANUFACTURER
39.	METER COVER IS SECURED TO BASE BY MEANS OF SEALABLE UNIDIRECTIONAL CAPTIVE SCREWS WITH TWO HOLES. (YES/NO)	TO BE FILLED BY MANUFACTURER

40.	TERMINAL BLOCK IS MADE FROM HIGH QUALITY NON-HYGROSCOPIC, FIRE RETARDANT, REINFORCED POLYCARBONATE / NON-BAKELITE MATERIAL (YES/NO)	YES
41.	MATERIAL OF WHICH THE TERMINAL BLOCK IS MADE IS CAPABLE OF PASSING THE TESTS GIVEN IN IS: 1336O (PART 6/SEC 17), ISO 75-1 (1993) & ISO 75-2 (1993) FOR A TEMPERATURE OF 135^{0}C AND A PRESSURE OF 1.8 MPA (METHOD A) (YES/NO)	YES
42.	TYPE TEST REPORT NOS. & DATE OF ABOVE	YES
43.	TWO SCREWS ARE PROVIDED IN EACH CURRENT & POTENTIAL TERMINAL FOR EFFECTIVELY CLAMPING THE EXTERNAL LEADS OR THIMBLES IN TERMINAL BLOCK (YES/NO)	YES
44.	MINIMUM INTERNAL DIAMETER OF TERMINAL HOLE	TO BE FILLED BY MANUFACTURER
45.	TERMINATION ARRANGEMENT IS PROVIDED WITH AN EXTENDED TRANSPARENT TERMINAL COVER AS PER CLAUSE NUMBER 6.5.2 OF IS: 14697 / 1999 (AMENDED UPTO DATE) IRRESPECTIVE OF REAR CONNECTIONS (YES/NO)	YES
46.	TERMINAL COVER IS UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE & IS MADE OF THE SAME MATERIAL AS THAT OF METER BODY (YES/NO)	YES
47.	TERMINAL COVER IS TRANSPARENT (YES/NO)	YES
48.	TERMINAL COVER ENCLOSES ACTUAL TERMINALS, CONDUCTOR FIXING SCREWS AND A SUITABLE LENGTH OF EXTERNAL CONDUCTORS AND THEIR INSULATION (YES/NO)	YES
49.	TERMINAL COVER IS PROVIDED WITH ONE SIDE HINGE/TWO TOP HINGES (YES/NO)	YES
50.	INDEPENDENT SEALING PROVISION IS MADE AGAINST OPENING OF THE TERMINAL COVER AND	YES

	FRONT COVER TO PREVENT UNAUTHORIZED TAMPERING (YES/NO)	
51.	BIDIRECTIONAL SCREWS WITH TWO HOLES FOR SEALING PURPOSE OF TERMINALCOVER ARE PROVIDED (YES/NO)	YES
52.	FIXING SCREWS USED ON THE TERMINAL COVER FOR FIXING AND SEALING ARE HELD CAPTIVE IN THE TERMINAL COVER (YES/NO)	YES
53.	PROPER SIZE OF GROOVES PROVIDED AT BOTTOM OF TERMINAL COVER FOR INCOMING SERVICE CONNECTIONS (YES/NO)	YES
54.	PUSH BUTTONS ARE PROVIDED AS PER SPECIFICATION (YES/NO)	YES
55.	PROVISION FOR AT LEAST TWO SEALS TO BE PUT BY UTILITY USER (YES/NO)	YES
56.	PROVISION OF DISPLAY OF HIGH RESOLUTION READING / ALTERNATE MODE (YES/NO)	YES
57.	OUTPUT DEVICE FOR TESTING OF METER IN THE FORM OF BLINKING LED WITH CONSTANT PULSE RATE IS PROVIDED (YES/NO)	YES
58.	RESOLUTION OF THE TEST OUTPUT DEVICE IS SUFFICIENT TO ENABLE THE STARTING CURRENT TEST IN LESS THAN 10 MINUTES (YES/NO)	YES
59.	PULSE RATE OF OUTPUT DEVICE IS PROGRAMMED ACCORDING TO PRIMARY VALUES OF VOLTAGE & CURRENT & IS PROVIDED ON NAMEPLATE (YES/NO)	YES
60.	METER CONSTANT IS INDELIBLY PRINTED ON THE NAME PLATE OF THE METER (YES/NO)	YES
61.	METER ACCURACY NOT AFFECTED BY AC / DC MAGNETIC FIELD AS PER CBIP 325 (YES/NO)	YES
62.	THE METER ACCURACY SHALL NOT BE AFFECTED BY EXTERNAL AC / DC / PERMANENT MAGNETIC FIELD AS PER CBIP TECHNICAL REPORT 325 WITH	YES

	LATEST AMENDMENTS. IF THE METER GETS AFFECTED UNDER INFLUENCE OF ANY MAGNETIC FIELD (AC / DC / PERMANENT), THEN THE SAME SHALL BE RECORDED AS MAGNETIC TAMPER EVENT WITH DATE & TIME STAMPING AND THE METER SHALL RECORD ENERGY MAXIMUM VALUE CURRENT (IMAX) AND REFERENCE VOLTAGE AT UNITY POWER FACTOR (YES/NO)	
63.	METER IS CAPABLE TO WITHSTAND AND NOT GET DAMAGED IF PHASE TO PHASE VOLTAGE IS APPLIED BETWEEN PHASES & NEUTRAL FOR FIVE MINUTES (YES/NO)	YES
64.	POWER SUPPLY UNIT IS MICRO CONTROL TYPE (SMPS) (YES/NO)	YES
65.	NON SPECIFIED DISPLAY PARAMETERS IN ARE BLOCKED AND NOT ACCESSIBLE FOR REPROGRAMMING AT SITE (YES/NO)	YES
66.	CTS ARE PROVIDED WITH MAGNETIC SHIELDING AND ARE TESTED SEPARATELY PRIOR TO ASSEMBLY (YES/NO)	YES
67.	COMPLETE METERING SYSTEM DOES NOT AFFECTED BY EXTERNAL ELECTROMAFNETIC INTERFERRENCE (YES/NO)	YES
68.	REAL TIME QUARTZ CLOCK IS USED IN METER FOR MAINTAINING TIME (IST) AND CALENDAR (YES/NO)	YES
69.	RTC BATTERY IS NON – RECHARGEABLE TYPE (YES/NO)	YES
70.	RTC PRE - PROGRAMMED FOR 30 YEARS DAY / DATE WITHOUT ANY NECESSITY FOR CORRECTION (YES/NO)	YES
71.	MAXIMUM DRIFT TIME OF RTC PER YEAR	SHALL NOT EXCEED +/- 300 SECONDS PER YEAR

72.	DAY / DATE SETTING & SYNCHRONISATION POSSIBLE THROUGH PASSWORD / KEY CODE (YES/NO)	YES
73.	RTC BATTERY & BATTERY FOR DISPLAY ARE SEPARATE (YES/NO)	YES
74.	METER WITHSTANDS HIGH VOLTAGE & HIGH FREQUENCY SURGES WHICH ARE SIMILAR TO THE SURGES PRODUCED BY INDUCTION COIL TYPE INSTRUMENTS WITHOUT AFFECTING THE ACCURACY OF THE METER (YES/NO)	YES
75.	ACCURACY OF METER IS NOT AFFECTED WITH APPLICATION OF ABNORMAL VOLTAGE / FREQUENCY GENERATING DEVICE SUCH AS SPARK DISCHARGE OF APPROXIMATELY 35 KV (YES/NO)	YES
76.	SPARK DISCHARGE OF APPROXIMATELY 35 KV CARRIED OUT (YES/NO)	YES
77.	METER LOGS UNSATISFACTORY OR NON FUNCTIONING OF RTC BATTERY (YES/NO)	YES
78.	METERING PROTOCOL AS PER ANNEX E - CATEGORY C1 METERS OF IS: 15959 / 2011 AMENDED UPTO DATE (YES/NO)	YES
79.	RS 232 & OPTICAL PORTS FOR COMMUNICATION AND WITH SEALING ARRANGEMENT ARE PROVIDED (YES/NO)	YES
80.	DEFAULT & MINIMUM BAUD RATE OF RS 232 & OPTICAL PORTS IS 9600 BPS (YES/NO)	YES
81.	INTERNAL NI-MH OR LI-ION OR NI CD MAINTENANCE FREE BATTERY OF LONG LIFE OF 10 YEARS WITH PUSH BUTTON ARRANGEMENT FOR ACTIVATION OF BATTERY (YES/NO)	YES
82.	METER PCB IS WIRE LESS & IS MADE BY SURFACE MOUNTING TECHNOLOGY (YES/NO)	YES
83.	METER RECORDS & DISPLAY TOTAL ENERGY	YES

	INCLUDING HARMONIC ENERGY (YES/NO)	
84.	NON VOLATILE MEMORY (NVM) WITH MINIMUM RETENTION PERIOD OF 10 YEARS IS PROVIDED (YES/NO)	YES
85.	6 (SIX) TOD TIME ZONES FOR ENERGY AND DEMAND ARE PROVIDED (YES/NO)	YES
86.	PROVISION FOR MD INTEGRATION PERIOD OF 15 MINUTE IS MADE (YES/NO)	YES
87.	PROVISION THROUGH COMMUNICATION DRIVEN RESET OF MD IS PROVIDED (YES/NO)	YES
88.	PROVISION TO RESET MD THROUGH LOCAL PUSH BUTTON IS PROVIDED (YES/NO)	YES
89.	PROVISION FOR AUTO RESET OF MD AT CERTAIN PREDEFINED PERIOD IS PROVIDED (YES/NO)	YES
90.	ALL ANTI TAMPER FEATURES ARE INCORPORATED IN METER AS PER SPECIFICATION (YES/NO)	YES
91.	METER LOGS TAMPER EVENTS AS PER SPECIFICATION (YES/NO)	YES
92.	TAMPER NO. & TAMPER EVENT IS REGISTERED IN TAMPER EVENT REGISTER (YES/NO)	YES
93.	THE NO. OF TIMES THE TAMPERING HAS BEEN DONE IS ALSO REGISTERED IN THE METER (YES/NO)	YES
94.	METER KEEPS RECORD OF TAMPER EVENTS FOR MINIMUM 200 EVENTS ON FIFO BASIS (YES/NO)	YES
95.	SUPPLY INDICATION IN THE FORM OF LED / LCD DISPLY IS PROVIDED (YES/NO)	YES
96.	SUPPLY INDICATION IS VISIBLE FROM THE FRONT OF THE METER (YES/NO)	YES
97.	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) OF MINIMUM 6 DIGITS AND MINIMUM 8 MM HEIGHT	YES

	AND WIDE VIEWING ANGLE IS PROVIDED (YES/NO)	
98.	SIZE OF DIGITS	TO BE FILLED BY MANUFACTURER
99.	AUTO DISPLAY CYCLING PUSH BUTTON WITH PERSISTENCE TIME OF 10 SECONDS IS PROVIDED (YES/NO)	YES
100.	PUSH BUTTON FOR HIGH RESOLUTION DISPLAY / ALTERNATE MODE OF DISPLAY IS PROVIDED (YES/NO)	YES
101.	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) IS SUITABLE FOR TEMPERATURE WITHSTAND OF 70^0C (YES/NO)	YES
102.	METER IS PROGRAMMED FOR (A) MD INTEGRATION PERIOD OF 15 MINUTES (YES/NO)	YES
103.	(B) AVERAGE POWER FACTOR WITH 2 DECIMAL DIGITS (YES/NO)	YES
104.	(C) AUTO RESET KVAMD AT 24.00 HRS. OF LAST DAY OF THE MONTH AS PER CLAUSE 10.00 (III) OF SPECIFICATION (YES/NO)	YES
105.	(D) ARRAY OF DATA TO BE RETAINED INSIDE THE METER MEMORY FOR THE LAST 32 DAYS FOR A CAPTURE PERIOD OF 15 MINUTES ON FIRST IN FIRST OUT BASIS (FIFO) (YES/NO)	YES
106.	SEQUENCE OF DISPLAY PARAMETERS IS AS PER SPECIFICATIONS (YES/NO)	YES
107.	METER RECORDS & DISPLAYS THE QUANTITES AS PER SPECIFICATION (YES/NO)	YES
108.	DISPLAY OTHER THAN SPECIFIED IS BLOCKED (YES/NO)	YES
109.	OTHER KVA MD VALUES ARE AVAILABLE IN RESET BACKUP DATA FOR 12 MONTHS.	YES

110.	METER DISPLAY RETURNS TO DEFAULT DISPLAY MODE IF 'PUSH BUTTON' IS NOT OPERATED FOR 15 SECONDS (YES/NO)	YES
111.	BILLING DATA IS AS PER SPECIFICATION	YES
112.	PROVISION FOR RECORDING HISTORY OF BILLING PARAMETERS FOR LAST 12 MONTHS (YES/NO)	YES
113.	PROVISION FOR LOAD SURVEY DATA FOR EVERY 15 MINUTES AND FOR PREVIOUS 32 DAYS FOR SPECIFIED PARAMETERS ON FIFO BASIS (YES/NO)	YES
114.	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	YES
115.	A DLMS COMPLIANT HHU AS PER ANNEX J OF IS: 15959 / 2011 IS PROVIDED (YES/NO)	YES
116.	PROVISION FOR AUTO POWER SAVE IS MADE ON HHU (YES/NO)	YES
117.	HHU HAS A MEMORY CAPACITY OF 512 MB SRAM (STATIC RAM) WITH BATTERY BACKUP & UPGRADEABLE AND BIOS / OS ON FLASH / EEPROM MEMORY OF 256 KB (RAM-512 MB, FLASH-2GB, SD CARD- 8GB WITH USB FACILITY (YES/NO)	YES
118.	HHU OFFERED IS FULLY TYPE TESTED AT APPROVED NABL LABORATORY FOR (a) TESTS OF MECHANICAL REQUIREMENT SUCH AS FREE FALL TEST, SHOCK TEST, VIBRATION TEST (YES/NO)	YES
119.	(b) TESTS OF CLIMATIC INFLUENCES SUCH AS TESTS OF PROTECTION AGAINST PENETRATION OF DUST AND WATER (IP 6X), DRY HEAT TEST, COLD TEST, DAMP HEAT CYCLIC TEST (YES/NO)	YES
120.	(c) TESTS FOR ELECTROMAGNETIC COMPATIBILITY (EMC) (YES/NO)	YES

121.	(d) TEST OF IMMUNITY TO ELECTROMAGNETIC HF FIELDS (YES/NO)	YES
122.	(e) RADIO INTERFERENCE MEASUREMENT (YES/NO)	YES
123.	TYPE TEST REPORT NOS. & DATE OF HHU (YES/NO)	YES
124.	BASE COMPUTER SOFTWARE IS "WINDOWS" BASED & USER FRIENDLY (YES/NO)	YES
125.	LICENSED COPIES OF BASE COMPUTER SOFTWARE ARE SUPPLIED FREE OF COST.	YES
126.	NO EDITING IN TRANSFERRED DATA IS POSSIBLE ON BASE COMPUTER AS WELL AS HHU BY ANY MEANS (YES/NO).	YES
127.	DOWNLOADING SOFTWARE IS SUBMITTED TO INSTALL ON OUR LAPTOP / PC FOR DIRECTLY DOWNLOADING DATA FROM METER WITHOUT THE USE OF HHU (YES/NO)	YES
128.	SOFTWARE PROVIDED ON LAPTOP/PC IS COMPATIBLE TO READ DATA FROM USB DRIVE (YES/NO)	YES
129.	CABLE WITH USB TERMINATION PROVIDED (YES/NO)	YES
130.	TOTAL TIME TAKEN FOR DOWNLOADING BILLING, TAMPER AND LOAD SURVEY DATA FOR 32 DAYS	LESS THAN OR EQUAL TO 9 MINUTES
131.	DOWNLOADING TIME OF ONLY BILLING DATA	LESS THAN OR EQUAL TO 20 SECS
132.	PERMANENT NATURE CONNECTION DIAGRAM OF METER IS SHOWN ON INSIDE PORTION OF THE TERMINAL COVER (YES/NO)	YES
133.	DISTINCTLY MARKED NAME PLATE WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS, CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL IS PROVIDED ON	YES

	METER (YES/NO)	
134.	METER SERIAL NUMBER IS BAR CODED WITH SIZE OF NOT BE LESS THAN 35X5 MM ALONG WITH NUMERIC NUMBER (YES/NO)	YES
135.	CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL AND INDELIBLY AND DISTINCTLY MARKED WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS NAME PLATE IS PROVIDED ON METER (YES/NO)	YES
136.	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	YES
137.	CATEGORY OF METER AS "CATEGORY C1 – HT (PT / CT) CONSUMER METER" IN 3 MM BOLD FONT IS MARKED ON NAME PLATE (YES/NO)	YES
138.	WHETHER METER IS TYPE TESTED (YES/NO)	YES
139.	TYPE TEST REPORT NOS. & DATE OF METER	TO BE FILLED BY MANUFACTURER
140.	METER PROTOCOL REPORT NOS. & DATES	TO BE FILLED BY MANUFACTURER
141.	ALL ACCEPTANCE & ROUTINE TESTS, AS PER IS: 14697 / 1999 AMENDED UPTO DATE & THIS SPECIFICATION ARE CARRIED OUT ON METER & METER BODY (YES/NO)	TO BE FILLED BY MANUFACTURER
142.	TRANSPORTATION TEST IS CARRIED OUT (YES/NO)	YES
143.	METER & HHU ARE GUARANTEED FOR A PERIOD OF 66 MONTHS FROM THE DATE OF SUPPLY OR 60 MONTHS FROM THE DATE OF COMMISSIONING, WHICHEVER IS EARLIER (YES/NO)	YES
144.	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING	YES

	GUARANTEE PERIOD (YES/NO)	
145.	FURNISH PRINCIPLE OF OPERATION OF METER OUTLINING THE METHODS AND STAGES OF COMPUTATIONS OF VARIOUS PARAMETERS STARTING FROM INPUT VOLTAGE AND CURRENT SIGNALS INCLUDING SAMPLING RATE IF APPLICABLE	YES
146.	IN HOUSE TESTING FACILITY IS AVAILABLE FOR (A) AC VOLTAGE TEST (YES/NO)	YES
147.	(b) INSULATION RESISTANCE TEST (YES/NO)	YES
148.	(c) ACCURACY REQUIREMENT (YES/NO)	YES
149.	(d) TEST ON LIMITS OF ERRORS (YES/NO)	YES
150.	(e) TEST ON METER CONSTANT (YES/NO)	YES
151.	(f) TEST OF STARTING CONDITION (YES/NO)	YES
152.	(g) TEST OF NO-LOAD CONDITION (YES/NO)	YES
153.	(h) REPEATABILITY OF ERROR TEST (YES/NO)	YES
154.	(i) TEST OF POWER CONSUMPTION (YES/NO)	YES
155.	(j) TRANSPORTATION TEST (YES/NO)	YES
156.	(k) TAMPER CONDITIONS AS PER MSEDCL SPECIFICATION (YES/NO)	YES
157.	(l) GLOW WIRE TEST (YES/NO)	YES
158.	(m) LONG DURATION TEST (YES/NO)	YES
159.	(n) FLAMABILITY TEST (YES/NO)	YES
160.	(o) MANUFACTURER HAVE DULY CALIBRATED RSS METER OF CLASS 0.01 ACCURACY	YES
161.	15 (FIFTEEN) NOS. OF SAMPLE METERS & 1 (ONE) HHU AS PER TECHNICAL SPECIFICATIONS ARE SUBMITTED ALONGWYH OFFER (YES/NO)	YES

162.	MANUFACTURING PROCESS, ASSEMBLY, TESTING & MANUFACTURING ACTIVITIES AS PER TECHNICAL SPECIFICATION (YES/NO)	YES
163.	AGEING TEST FOR 72 HOURS AT 55^0 C TEMPERATURE AND ATMOSPHERIC HUMIDITY UNDER REAL LIFE CONDITION AT FULL LOAD CURRENT TO ELIMINATE INFANT MORTALITY IS CARRIED OUT (YES/NO)	YES
164.	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	YES
165.	QUALITY ASSURANCE PLAN AS PER SPECIFICATIONS IS ENCLOSED (YES/NO)	TO BE FILLED BY MANUFACTURER
166.	COMPONENT SPECIFICATION AS PER SPECIFICATION (YES/NO)	YES

Technical Specification Cont	
Item	Technical Specification
3P4WCT/PT 1A AMR HT TOD MET 0.2S F.L-A(77001118784)	Refer To The Following Item Specification: 3P4wCT PT 5A AMR HT TOD meter of 0.2S F.(77001118434)
3P4WCT/PT 1A AMR HT TOD MET 0.5S F.L.-A(77001118194)	Refer To The Following Item Specification: 3P4wCT PT 5A AMR HT TOD met 0.5S-F.L-A(77001119834)

3P4wCT PT 5A AMR HT TOD met 0.5S-F.L-A

GTP Order Sequence	GTP Parameters	Date Type
1	MANUFACTURER'S / SUPPLIER'S NAME AND ADDRESS WITH WORKS ADDRESS	TEXT
2	MAKE AND TYPE OF METER	TEXT
3	APPLICABLE STANDARD IS AS PER IS: 14697 /1999 (AMENDED UPTO DATE), IS: 15959 / 2011, CBIP TECH REPORT 325 AMENDED UP TO DATE, IS: 15707 / 2006 (YES/NO)	BOOLEAN
4	METER BEARS ISI MARK (YES/NO)	BOOLEAN
5	FREQUENCY	TEXT
6	ACCURACY CLASS OF METER	TEXT
7	PT SECONDARY VOLTAGE	TEXT
8	RATED VOLTAGE	TEXT
9	VOLTAGE RANGE	TEXT
10	BASIC CURRENT (IB) OF METER	TEXT
11	MAXIMUM CONTINUOUS CURRENT (IMAX)	TEXT
12	SHORT TIME OVER CURRENT	TEXT
13	STARTING CURRENT OF METER	TEXT
14	CT RATIO OF METER	TEXT
15	POWER CONSUMPTION IN EACH VOLTAGE CIRCUIT	TEXT
16	POWER CONSUMPTION IN EACH CURRENT CIRCUIT	TEXT
17	POWER FACTOR	TEXT
18	POWER SUPPLY IS SMPS & MICRO CONTROL TYPE (YES/NO)	BOOLEAN
19	STANDARD REFERENCE TEMPERATURE OF METER	TEXT
20	MEAN TEMPERATURE CO-EFFICIENT	TEXT
21	KVA MD PROVIDED (YES/NO)	BOOLEAN
22	OPAQUE METER BASE & TRANSPARENT TOP COVER IS MADE OUT OF, UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE MATERIAL SO AS TO GIVE IT AND QUALITIES. (YES/NO)	BOOLEAN
23	POLY CARBONATE BODY OF METER CONFORMS TO IS: 11731 (FV-2 CATEGORY) (YES/NO)	BOOLEAN
24	POLY CARBONATE BODY MEETS TEST REQUIREMENT OF (a) HEAT DEFLECTION TEST AS PER ISO 75 > 1500C (YES/NO)	BOOLEAN
25	(a) GLOW WIRE TEST AS PER IS: 11000 (PART 2/SEC-1) 1984 OR IEC PUB 60695-2-12 AT 9000C (YES/NO)	BOOLEAN
26	(a) BALL PRESSURE TEST AS PER IEC--60695-10-2 (YES/NO)	BOOLEAN
27	(a) FLAMMABILITY TEST AS PER UL 94 OR IS 11731 (PART-2) 1986 (YES/NO)	BOOLEAN

28	TYPE TEST REPORT NOS. & DATE OF ABOVE (A) TO (D)	TEXT
29	PHYSICAL WATER ABSORPTION VALUE OF METER BODY	TEXT
30	THERMAL HDDT VALUE OF METER BODY	TEXT
31	TENSILE STRENGTH OF METER BODY	TEXT
32	FLEXURE STRENGTH OF METER BODY	TEXT
33	MODULUS OF ELASTICITY OF METER BODY	TEXT
34	IZOD IMPACT STRENGTH OF METER BODY NOTCHED AT 23°C	TEXT
35	POLY-CARBONATE OPAQUE BASE AND TRANSPARENT TOP COVER IS ULTRA-SONICALLY WELDED (CONTINUOUS WELDING) (YES/NO)	BOOLEAN
36	THICKNESS OF MATERIAL FOR METER COVER & BASE	TEXT
37	METER BODY TYPE TESTED FOR IP51 DEGREE OF PROTECTION AS PER IS: 12063 AGAINST INGRESS OF DUST, MOISTURE & VERMIN. (YES/NO)	BOOLEAN
38	IP51 DEGREE OF PROTECTION AS PER IS: 12063 TEST CERTIFICATE NO. & DATE	TEXT
39	METER COVER IS SECURED TO BASE BY MEANS OF SEALABLE UNIDIRECTIONAL CAPTIVE SCREWS WITH TWO HOLES. (YES/NO)	BOOLEAN
40	TERMINAL BLOCK IS MADE FROM HIGH QUALITY NON-HYGROSCOPIC, FIRE RETARDANT, REINFORCED POLYCARBONATE / NON-BAKELITE MATERIAL (YES/NO)	BOOLEAN
41	MATERIAL OF WHICH THE TERMINAL BLOCK IS MADE IS CAPABLE OF PASSING THE TESTS GIVEN IN IS: 1336O (PART 6/SEC 17), ISO 75-1 (1993) & ISO 75-2 (1993) FOR A TEMPERATURE OF 1350C AND A PRESSURE OF 1.8 MPA (METHOD A) (YES/NO)	BOOLEAN
42	TYPE TEST REPORT NOS. & DATE OF ABOVE	TEXT
43	TWO SCREWS ARE PROVIDED IN EACH CURRENT & POTENTIAL TERMINAL FOR EFFECTIVELY CLAMPING THE EXTERNAL LEADS OR THIMBLES IN TERMINAL BLOCK (YES/NO)	BOOLEAN
44	MINIMUM INTERNAL DIAMETER OF TERMINAL HOLE	TEXT
45	TERMINATION ARRANGEMENT IS PROVIDED WITH AN EXTENDED TRANSPARENT TERMINAL COVER AS PER CLAUSE NUMBER 6.5.2 OF IS: 14697 / 1999 (AMENDED UPTO DATE) IRRESPECTIVE OF REAR CONNECTIONS (YES/NO)	BOOLEAN
46	TERMINAL COVER IS UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE & IS MADE OF THE SAME MATERIAL AS THAT OF METER BODY (YES/NO)	BOOLEAN
47	TERMINAL COVER IS TRANSPARENT (YES/NO)	BOOLEAN
48	TERMINAL COVER ENCLOSES ACTUAL TERMINALS, CONDUCTOR FIXING SCREWS AND A SUITABLE LENGTH OF EXTERNAL CONDUCTORS AND THEIR INSULATION (YES/NO)	BOOLEAN
49	TERMINAL COVER IS PROVIDED WITH ONE SIDE HINGE/TWO TOP HINGES (YES/NO)	BOOLEAN
50	INDEPENDENT SEALING PROVISION IS MADE AGAINST OPENING OF THE TERMINAL COVER AND FRONT COVER TO PREVENT UNAUTHORIZED TAMPERING (YES/NO)	BOOLEAN
51	BIDIRECTIONAL SCREWS WITH TWO HOLES FOR SEALING PURPOSE OF TERMINALCOVER ARE PROVIDED (YES/NO)	BOOLEAN
52	FIXING SCREWS USED ON THE TERMINAL COVER FOR FIXING AND SEALING ARE HELD CAPTIVE IN THE TERMINAL COVER (YES/NO)	BOOLEAN
53	PROPER SIZE OF GROOVES PROVIDED AT BOTTOM OF TERMINAL COVER FOR INCOMING SERVICE CONNECTIONS (YES/NO)	BOOLEAN

54	PUSH BUTTONS ARE PROVIDED AS PER SPECIFICATION (YES/NO)	BOOLEAN
55	PROVISION FOR AT LEAST TWO SEALS TO BE PUT BY UTILITY USER (YES/NO)	BOOLEAN
56	PROVISION OF DISPLAY OF HIGH RESOLUTION READING / ALTERNATE MODE (YES/NO)	BOOLEAN
57	OUTPUT DEVICE FOR TESTING OF METER IN THE FORM OF BLINKING LED WITH CONSTANT PULSE RATE IS PROVIDED (YES/NO)	BOOLEAN
58	RESOLUTION OF THE TEST OUTPUT DEVICE IS SUFFICIENT TO ENABLE THE STARTING CURRENT TEST IN LESS THAN 10 MINUTES (YES/NO)	BOOLEAN
59	PULSE RATE OF OUTPUT DEVICE IS PROGRAMMED ACCORDING TO PRIMARY VALUES OF VOLTAGE & CURRENT & IS PROVIDED ON NAMEPLATE (YES/NO)	BOOLEAN
60	METER CONSTANT IS INDELIBLY PRINTED ON THE NAME PLATE OF THE METER (YES/NO)	BOOLEAN
61	METER ACCURACY NOT AFFECTED BY AC / DC MAGNETIC FIELD AS PER CBIP 325 (YES/NO)	BOOLEAN
62	THE METER ACCURACY SHALL NOT BE AFFECTED BY EXTERNAL AC / DC / PERMANENT MAGNETIC FIELD AS PER CBIP TECHNICAL REPORT 325 WITH LATEST AMENDMENTS.	BOOLEAN
63	METER IS CAPABLE TO WITHSTAND AND NOT GET DAMAGED IF PHASE TO PHASE VOLTAGE IS APPLIED BETWEEN PHASES & NEUTRAL FOR FIVE MINUTES (YES/NO)	BOOLEAN
64	POWER SUPPLY UNIT IS MICRO CONTROL TYPE (SMPS) (YES/NO)	BOOLEAN
65	NON SPECIFIED DISPLAY PARAMETERS IN ARE BLOCKED AND NOT ACCESSIBLE FOR REPROGRAMMING AT SITE (YES/NO)	BOOLEAN
66	CTS ARE PROVIDED WITH MAGNETIC SHIELDING AND ARE TESTED SEPARATELY PRIOR TO ASSEMBLY (YES/NO)	BOOLEAN
67	COMPLETE METERING SYSTEM DOES NOT AFFECTED BY EXTERNAL ELECTROMAFNETIC INTERFERRENCE (YES/NO)	BOOLEAN
68	REAL TIME QUARTZ CLOCK IS USED IN METER FOR MAINTAINING TIME (IST) AND CALENDAR (YES/NO)	BOOLEAN
69	RTC BATTERY IS NON – RECHARGEABLE TYPE (YES/NO)	BOOLEAN
70	RTC PRE - PROGRAMMED FOR 30 YEARS DAY / DATE WITHOUT ANY NECESSITY FOR CORRECTION (YES/NO)	BOOLEAN
71	MAXIMUM DRIFT TIME OF RTC PER YEAR	TEXT
72	DAY / DATE SETTING & SYNCHRONISATION POSSIBLE THROUGH PASSWORD / KEY CODE (YES/NO)	BOOLEAN
73	RTC BATTERY & BATTERY FOR DISPLAY ARE SEPARATE (YES/NO)	BOOLEAN
74	METER WITHSTANDS HIGH VOLTAGE & HIGH FREQUENCY SURGES WHICH ARE SIMILAR TO THE SURGES PRODUCED BY INDUCTION COIL TYPE INSTRUMENTS WITHOUT AFFECTING THE ACCURACY OF THE METER (YES/NO)	BOOLEAN
75	ACCURACY OF METER IS NOT AFFECTED WITH APPLICATION OF ABNORMAL VOLTAGE / FREQUENCY GENERATING DEVICE SUCH AS SPARK DISCHARGE OF APPROXIMATELY 35 KV (YES/NO)	BOOLEAN
76	SPARK DISCHARGE OF APPROXIMATELY 35 KV CARRIED OUT (YES/NO)	BOOLEAN
77	METER LOGS UNSATISFACTORY OR NON FUNCTIONING OF RTC BATTERY (YES/NO)	BOOLEAN
78	METERING PROTOCOL AS PER ANNEX E - CATEGORY C1 METERS OF IS: 15959 / 2011 AMENDED UPTO DATE (YES/NO)	BOOLEAN
79	RS 232 & OPTICAL PORTS FOR COMMUNICATION AND WITH SEALING ARRANGEMENT ARE PROVIDED (YES/NO)	BOOLEAN

80	DEFAULT & MINIMUM BAUD RATE OF RS 232 & OPTICAL PORTS IS 9600 BPS (YES/NO)	BOOLEAN
81	INTERNAL NI-MH OR LI-ION OR NI CD MAINTENANCE FREE BATTERY OF LONG LIFE OF 10 YEARS WITH PUSH BUTTON ARRANGEMENT FOR ACTIVATION OF BATTERY (YES/NO)	BOOLEAN
82	METER PCB IS WIRE LESS & IS MADE BY SURFACE MOUNTING TECHNOLOGY (YES/NO)	BOOLEAN
83	METER RECORDS & DISPLAY TOTAL ENERGY INCLUDING HARMONIC ENERGY (YES/NO)	BOOLEAN
84	NON VOLATILE MEMORY (NVM) WITH MINIMUM RETENTION PERIOD OF 10 YEARS IS PROVIDED (YES/NO)	BOOLEAN
85	6 (SIX) TOD TIME ZONES FOR ENERGY AND DEMAND ARE PROVIDED (YES/NO)	BOOLEAN
86	PROVISION FOR MD INTEGRATION PERIOD OF 15 MINUTE IS MADE (YES/NO)	BOOLEAN
87	PROVISION THROUGH COMMUNICATION DRIVEN RESET OF MD IS PROVIDED (YES/NO)	BOOLEAN
88	PROVISION TO RESET MD THROUGH LOCAL PUSH BUTTON IS PROVIDED (YES/NO)	BOOLEAN
89	PROVISION FOR AUTO RESET OF MD AT CERTAIN PREDEFINED PERIOD IS PROVIDED (YES/NO)	BOOLEAN
90	ALL ANTI TAMPER FEATURES ARE INCORPORATED IN METER AS PER SPECIFICATION (YES/NO)	BOOLEAN
91	METER LOGS TAMPER EVENTS AS PER SPECIFICATION (YES/NO)	BOOLEAN
92	TAMPER NO. & TAMPER EVENT IS REGISTERED IN TAMPER EVENT REGISTER (YES/NO)	BOOLEAN
93	THE NO. OF TIMES THE TAMPERING HAS BEEN DONE IS ALSO REGISTERED IN THE METER (YES/NO)	BOOLEAN
94	METER KEEPS RECORD OF TAMPER EVENTS FOR MINIMUM 200 EVENTS ON FIFO BASIS (YES/NO)	BOOLEAN
95	SUPPLY INDICATION IN THE FORM OF LED / LCD DISPLY IS PROVIDED (YES/NO)	BOOLEAN
96	SUPPLY INDICATION IS VISIBLE FROM THE FRONT OF THE METER (YES/NO)	BOOLEAN
97	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) OF MINIMUM 6 DIGITS AND MINIMUM 8 MM HEIGHT AND WIDE VIEWING ANGLE IS PROVIDED (YES/NO)	BOOLEAN
98	SIZE OF DIGITS	TEXT
99	AUTO DISPLAY CYCLING PUSH BUTTON WITH PERSISTENCE TIME OF 10 SECONDS IS PROVIDED (YES/NO)	BOOLEAN
100	PUSH BUTTON FOR HIGH RESOLUTION DISPLAY / ALTERNATE MODE OF DISPLAY IS PROVIDED (YES/NO)	BOOLEAN
101	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) IS SUITABLE FOR TEMPERATURE WITHSTAND OF 700C (YES/NO)	BOOLEAN
102	METER IS PROGRAMMED FOR (A) MD INTEGRATION PERIOD OF 15 MINUTES (YES/NO)	BOOLEAN
103	(A) AVERAGE POWER FACTOR WITH 2 DECIMAL DIGITS (YES/NO)	BOOLEAN
104	(A) AUTO RESET KVAMD AT 24.00 HRS. OF LAST DAY OF THE MONTH AS PER CLAUSE 10.00 (III) OF SPECIFICATION (YES/NO)	BOOLEAN
105	(A) ARRAY OF DATA TO BE RETAINED INSIDE THE METER MEMORY FOR THE LAST 32 DAYS FOR A CAPTURE PERIOD OF 15 MINUTES ON FIRST IN FIRST OUT BASIS (FIFO) (YES/NO)	BOOLEAN
106	SEQUENCE OF DISPLAY PARAMETERS IS AS PER SPECIFICATIONS (YES/NO)	BOOLEAN

107	METER RECORDS & DISPLAYS THE QUANTITES AS PER SPECIFICATION (YES/NO)	BOOLEAN
108	DISPLAY OTHER THAN SPECIFIED IS BLOCKED (YES/NO)	BOOLEAN
109	OTHER KVA MD VALUES ARE AVAILABLE IN RESET BACKUP DATA FOR 12 MONTHS.	BOOLEAN
110	METER DISPLAY RETURNS TO DEFAULT DISPLAY MODE IF 'PUSH BUTTON' IS NOT OPERATED FOR 15 SECONDS (YES/NO)	BOOLEAN
111	BILLING DATA IS AS PER SPECIFICATION	BOOLEAN
112	PROVISION FOR RECORDING HISTORY OF BILLING PARAMETERS FOR LAST 12 MONTHS (YES/NO)	BOOLEAN
113	PROVISION FOR LOAD SURVEY DATA FOR EVERY 15 MINUTES AND FOR PREVIOUS 32 DAYS FOR SPECIFIED PARAMETERS ON FIFO BASIS (YES/NO)	BOOLEAN
114	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	BOOLEAN
115	A DLMS COMPLIANT HHU AS PER ANNEX J OF IS: 15959 / 2011 IS PROVIDED (YES/NO)	BOOLEAN
116	PROVISION FOR AUTO POWER SAVE IS MADE ON HHU (YES/NO)	BOOLEAN
117	HHU HAS A MEMORY CAPACITY OF 512 MB SRAM (STATIC RAM) WITH BATTERY BACKUP & UPGRADEABLE AND BIOS / OS ON FLASH / EEPROM MEMORY OF 256 KB (RAM-512 MB, FLASH-2GB, SD CARD- 8GB WITH USB FACILITY (YES/NO)	BOOLEAN
118	HHU OFFERED IS FULLY TYPE TESTED AT APPROVED NABL LABORATORY FOR (a) TESTS OF MECHANICAL REQUIREMENT SUCH AS FREE FALL TEST, SHOCK TEST, VIBRATION TEST (YES/NO)	BOOLEAN
119	(a) TESTS OF CLIMATIC INFLUENCES SUCH AS TESTS OF PROTECTION AGAINST PENETRATION OF DUST AND WATER (IP 6X), DRY HEAT TEST, COLD TEST, DAMP HEAT CYCLIC TEST (YES/NO)	BOOLEAN
120	(a) TESTS FOR ELECTROMAGNETIC COMPATIBILITY (EMC) (YES/NO)	BOOLEAN
121	(a) TEST OF IMMUNITY TO ELECTROMAGNETIC HF FIELDS (YES/NO)	BOOLEAN
122	(a) RADIO INTERFERENCE MEASUREMENT (YES/NO)	BOOLEAN
123	TYPE TEST REPORT NOS. & DATE OF HHU (YES/NO)	BOOLEAN
124	BASE COMPUTER SOFTWARE IS "WINDOWS" BASED & USER FRIENDLY (YES/NO)	BOOLEAN
125	LICENSED COPIES OF BASE COMPUTER SOFTWARE ARE SUPPLIED FREE OF COST.	BOOLEAN
126	NO EDITING IN TRANSFERRED DATA IS POSSIBLE ON BASE COMPUTER AS WELL AS HHU BY ANY MEANS (YES/NO).	BOOLEAN
127	DOWNLOADING SOFTWARE IS SUBMITTED TO INSTALL ON OUR LAPTOP / PC FOR DIRECTLY DOWNLOADING DATA FROM METER WITHOUT THE USE OF HHU (YES/NO)	BOOLEAN
128	SOFTWARE PROVIDED ON LAPTOP/PC IS COMPATIBLE TO READ DATA FROM USB DRIVE (YES/NO)	BOOLEAN
129	CABLE WITH USB TERMINATION PROVIDED (YES/NO)	BOOLEAN
130	TOTAL TIME TAKEN FOR DOWNLOADING BILLING, TAMPER AND LOAD SURVEY DATA FOR 32 DAYS	TEXT
131	DOWNLOADING TIME OF ONLY BILLING DATA	TEXT
132	PERMANENT NATURE CONNECTION DIAGRAM OF METER IS SHOWN ON INSIDE PORTION OF THE TERMINAL COVER (YES/NO)	BOOLEAN
133	DISTINCTLY MARKED NAME PLATE WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS, CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL IS PROVIDED ON METER (YES/NO)	BOOLEAN

134	METER SERIAL NUMBER IS BAR CODED WITH SIZE OF NOT BE LESS THAN 35X5 MM ALONG WITH NUMERIC NUMBER (YES/NO)	BOOLEAN
135	CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL AND INDELIBLY AND DISTINCTLY MARKED WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS NAME PLATE IS PROVIDED ON METER (YES/NO)	BOOLEAN
136	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	BOOLEAN
137	CATEGORY OF METER AS “CATEGORY C1 – HT (PT / CT) CONSUMER METER” IN 3 MM BOLD FONT IS MARKED ON NAME PLATE (YES/NO)	BOOLEAN
138	WHETHER METER IS TYPE TESTED (YES/NO)	BOOLEAN
139	TYPE TEST REPORT NOS. & DATE OF METER	TEXT
140	METER PROTOCOL REPORT NOS. & DATES	TEXT
141	ALL ACCEPTANCE & ROUTINE TESTS, AS PER IS: 14697 / 1999 AMENDED UPTO DATE & THIS SPECIFICATION ARE CARRIED OUT ON METER & METER BODY (YES/NO)	BOOLEAN
142	TRANSPORTATION TEST IS CARRIED OUT (YES/NO)	BOOLEAN
143	METER & HHU ARE GUARANTEED FOR A PERIOD OF 66 MONTHS FROM THE DATE OF SUPPLY OR 60 MONTHS FROM THE DATE OF COMMISSIONING, WHICHEVER IS EARLIER (YES/NO)	BOOLEAN
144	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	BOOLEAN
145	FURNISH PRINCIPLE OF OPERATION OF METER OUTLINING THE METHODS AND STAGES OF COMPUTATIONS OF VARIOUS PARAMETERS STARTING FROM INPUT VOLTAGE AND CURRENT SIGNALS INCLUDING SAMPLING RATE IF APPLICABLE	TEXT
146	IN HOUSE TESTING FACILITY IS AVAILABLE FOR (A) AC VOLTAGE TEST (YES/NO)	BOOLEAN
147	(b) INSULATION RESISTANCE TEST (YES/NO)	BOOLEAN
148	(b) ACCURACY REQUIREMENT (YES/NO)	BOOLEAN
149	(b) TEST ON LIMITS OF ERRORS (YES/NO)	BOOLEAN
150	(b) TEST ON METER CONSTANT (YES/NO)	BOOLEAN
151	(b) TEST OF STARTING CONDITION (YES/NO)	BOOLEAN
152	(b) TEST OF NO-LOAD CONDITION (YES/NO)	BOOLEAN
153	(b) REPEATABILITY OF ERROR TEST (YES/NO)	BOOLEAN
154	(b) TEST OF POWER CONSUMPTION (YES/NO)	BOOLEAN
155	(b) TRANSPORTATION TEST (YES/NO)	BOOLEAN
156	(b) TAMPER CONDITIONS AS PER MSEDCL SPECIFICATION (YES/NO)	BOOLEAN
157	(b) GLOW WIRE TEST (YES/NO)	BOOLEAN
158	(b) LONG DURATION TEST (YES/NO)	BOOLEAN
159	(b) FLAMABILITY TEST (YES/NO)	BOOLEAN
160	(b) MANUFACTURER HAVE DULY CALIBRATED RSS METER OF CLASS 0.01 ACCURACY	BOOLEAN
161	15 (FIFTEEN) NOS. OF SAMPLE METERS & 1 (ONE) HHU AS PER TECHNICAL SPECIFICATIONS ARE SUBMITTED ALONGWYH OFFER (YES/NO)	BOOLEAN

162	MANUFACTURING PROCESS, ASSEMBLY, TESTING & MANUFACTURING ACTIVITIES AS PER TECHNICAL SPECIFICATION (YES/NO)	BOOLEAN
163	AGEING TEST FOR 72 HOURS AT 550 C TEMPERATURE AND ATMOSPHERIC HUMIDITY UNDER REAL LIFE CONDITION AT FULL LOAD CURRENT TO ELIMINATE INFANT MORTALITY IS CARRIED OUT (YES/NO)	BOOLEAN
164	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	BOOLEAN
165	QUALITY ASSURANCE PLAN AS PER SPECIFICATIONS IS ENCLOSED (YES/NO)	BOOLEAN
166	COMPONENT SPECIFICATION AS PER SPECIFICATION (YES/NO)	BOOLEAN

3P4WCT/PT 1A AMR HT TOD MET 0.5S F.L.-A

GTP Order Sequence	GTP Parameters	Date Type
1	MANUFACTURER'S / SUPPLIER'S NAME AND ADDRESS WITH WORKS ADDRESS	TEXT
2	MAKE AND TYPE OF METER	TEXT
3	APPLICABLE STANDARD IS AS PER IS: 14697 /1999 (AMENDED UPTO DATE), IS: 15959 / 2011, CBIP TECH REPORT 325 AMENDED UP TO DATE, IS: 15707 / 2006 (YES/NO)	BOOLEAN
4	METER BEARS ISI MARK (YES/NO)	BOOLEAN
5	FREQUENCY	TEXT
6	ACCURACY CLASS OF METER	TEXT
7	PT SECONDARY VOLTAGE	TEXT
8	RATED VOLTAGE	TEXT
9	VOLTAGE RANGE	TEXT
10	BASIC CURRENT (IB) OF METER	TEXT
11	MAXIMUM CONTINUOUS CURRENT (IMAX)	TEXT
12	SHORT TIME OVER CURRENT	TEXT
13	STARTING CURRENT OF METER	TEXT
14	CT RATIO OF METER	TEXT
15	POWER CONSUMPTION IN EACH VOLTAGE CIRCUIT	TEXT
16	POWER CONSUMPTION IN EACH CURRENT CIRCUIT	TEXT
17	POWER FACTOR	TEXT
18	POWER SUPPLY IS SMPS & MICRO CONTROL TYPE (YES/NO)	BOOLEAN
19	STANDARD REFERENCE TEMPERATURE OF METER	TEXT
20	MEAN TEMPERATURE CO-EFFICIENT	TEXT
21	KVA MD PROVIDED (YES/NO)	BOOLEAN
22	OPAQUE METER BASE & TRANSPARENT TOP COVER IS MADE OUT OF, UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE MATERIAL SO AS TO GIVE IT AND QUALITIES. (YES/NO)	BOOLEAN

23	POLY CARBONATE BODY OF METER CONFORMS TO IS: 11731 (FV-2 CATEGORY) (YES/NO)	BOOLEAN
24	POLY CARBONATE BODY MEETS TEST REQUIREMENT OF (a) HEAT DEFLECTION TEST AS PER ISO 75 > 1500C (YES/NO)	BOOLEAN
25	(a) GLOW WIRE TEST AS PER IS: 11000 (PART 2/SEC-1) 1984 OR IEC PUB 60695-2-12 AT 9000C (YES/NO)	BOOLEAN
26	(a) BALL PRESSURE TEST AS PER IEC--60695-10-2 (YES/NO)	BOOLEAN
27	(a) FLAMMABILITY TEST AS PER UL 94 OR IS 11731 (PART-2) 1986 (YES/NO)	BOOLEAN
28	TYPE TEST REPORT NOS. & DATE OF ABOVE (A) TO (D)	TEXT
29	PHYSICAL WATER ABSORPTION VALUE OF METER BODY	TEXT
30	THERMAL HDDT VALUE OF METER BODY	TEXT
31	TENSILE STRENGTH OF METER BODY	TEXT
32	FLEXURE STRENGTH OF METER BODY	TEXT
33	MODULUS OF ELASTICITY OF METER BODY	TEXT
34	IZOD IMPACT STRENGTH OF METER BODY NOTCHED AT 23°C	TEXT
35	POLY-CARBONATE OPAQUE BASE AND TRANSPARENT TOP COVER IS ULTRA-SONICALLY WELDED (CONTINUOUS WELDING) (YES/NO)	BOOLEAN
36	THICKNESS OF MATERIAL FOR METER COVER & BASE	TEXT
37	METER BODY TYPE TESTED FOR IP51 DEGREE OF PROTECTION AS PER IS: 12063 AGAINST INGRESS OF DUST, MOISTURE & VERMIN. (YES/NO)	BOOLEAN
38	IP51 DEGREE OF PROTECTION AS PER IS: 12063 TEST CERTIFICATE NO. & DATE	TEXT
39	METER COVER IS SECURED TO BASE BY MEANS OF SEALABLE UNIDIRECTIONAL CAPTIVE SCREWS WITH TWO HOLES. (YES/NO)	BOOLEAN
40	TERMINAL BLOCK IS MADE FROM HIGH QUALITY NON-HYGROSCOPIC, FIRE RETARDANT, REINFORCED POLYCARBONATE / NON-BAKELITE MATERIAL (YES/NO)	BOOLEAN
41	MATERIAL OF WHICH THE TERMINAL BLOCK IS MADE IS CAPABLE OF PASSING THE TESTS GIVEN IN IS: 1336O (PART 6/SEC 17), ISO 75-1 (1993) & ISO 75-2 (1993) FOR A TEMPERATURE OF 1350C AND A PRESSURE OF 1.8 MPA (METHOD A) (YES/NO)	BOOLEAN
42	TYPE TEST REPORT NOS. & DATE OF ABOVE	TEXT
43	TWO SCREWS ARE PROVIDED IN EACH CURRENT & POTENTIAL TERMINAL FOR EFFECTIVELY CLAMPING THE EXTERNAL LEADS OR THIMBLES IN TERMINAL BLOCK (YES/NO)	BOOLEAN
44	MINIMUM INTERNAL DIAMETER OF TERMINAL HOLE	TEXT
45	TERMINATION ARRANGEMENT IS PROVIDED WITH AN EXTENDED TRANSPARENT TERMINAL COVER AS PER CLAUSE NUMBER 6.5.2 OF IS: 14697 / 1999 (AMENDED UPTO DATE) IRRESPECTIVE OF REAR CONNECTIONS (YES/NO)	BOOLEAN
46	TERMINAL COVER IS UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE & IS MADE OF THE SAME MATERIAL AS THAT OF METER BODY (YES/NO)	BOOLEAN
47	TERMINAL COVER IS TRANSPARENT (YES/NO)	BOOLEAN
48	TERMINAL COVER ENCLOSES ACTUAL TERMINALS, CONDUCTOR FIXING SCREWS AND A SUITABLE LENGTH OF EXTERNAL CONDUCTORS AND THEIR INSULATION (YES/NO)	BOOLEAN
49	TERMINAL COVER IS PROVIDED WITH ONE SIDE HINGE/TWO TOP HINGES (YES/NO)	BOOLEAN

50	INDEPENDENT SEALING PROVISION IS MADE AGAINST OPENING OF THE TERMINAL COVER AND FRONT COVER TO PREVENT UNAUTHORIZED TAMPERING (YES/NO)	BOOLEAN
51	BIDIRECTIONAL SCREWS WITH TWO HOLES FOR SEALING PURPOSE OF TERMINALCOVER ARE PROVIDED (YES/NO)	BOOLEAN
52	FIXING SCREWS USED ON THE TERMINAL COVER FOR FIXING AND SEALING ARE HELD CAPTIVE IN THE TERMINAL COVER (YES/NO)	BOOLEAN
53	PROPER SIZE OF GROOVES PROVIDED AT BOTTOM OF TERMINAL COVER FOR INCOMING SERVICE CONNECTIONS (YES/NO)	BOOLEAN
54	PUSH BUTTONS ARE PROVIDED AS PER SPECIFICATION (YES/NO)	BOOLEAN
55	PROVISION FOR AT LEAST TWO SEALS TO BE PUT BY UTILITY USER (YES/NO)	BOOLEAN
56	PROVISION OF DISPLAY OF HIGH RESOLUTION READING / ALTERNATE MODE (YES/NO)	BOOLEAN
57	OUTPUT DEVICE FOR TESTING OF METER IN THE FORM OF BLINKING LED WITH CONSTANT PULSE RATE IS PROVIDED (YES/NO)	BOOLEAN
58	RESOLUTION OF THE TEST OUTPUT DEVICE IS SUFFICIENT TO ENABLE THE STARTING CURRENT TEST IN LESS THAN 10 MINUTES (YES/NO)	BOOLEAN
59	PULSE RATE OF OUTPUT DEVICE IS PROGRAMMED ACCORDING TO PRIMARY VALUES OF VOLTAGE & CURRENT & IS PROVIDED ON NAMEPLATE (YES/NO)	BOOLEAN
60	METER CONSTANT IS INDELIBLY PRINTED ON THE NAME PLATE OF THE METER (YES/NO)	BOOLEAN
61	METER ACCURACY NOT AFFECTED BY AC / DC MAGNETIC FIELD AS PER CBIP 325 (YES/NO)	BOOLEAN
62	THE METER ACCURACY SHALL NOT BE AFFECTED BY EXTERNAL AC / DC / PERMANENT MAGNETIC FIELD AS PER CBIP TECHNICAL REPORT 325 WITH LATEST AMENDMENTS.	BOOLEAN
63	METER IS CAPABLE TO WITHSTAND AND NOT GET DAMAGED IF PHASE TO PHASE VOLTAGE IS APPLIED BETWEEN PHASES & NEUTRAL FOR FIVE MINUTES (YES/NO)	BOOLEAN
64	POWER SUPPLY UNIT IS MICRO CONTROL TYPE (SMPS) (YES/NO)	BOOLEAN
65	NON SPECIFIED DISPLAY PARAMETERS IN ARE BLOCKED AND NOT ACCESSIBLE FOR REPROGRAMMING AT SITE (YES/NO)	BOOLEAN
66	CTS ARE PROVIDED WITH MAGNETIC SHIELDING AND ARE TESTED SEPARATELY PRIOR TO ASSEMBLY (YES/NO)	BOOLEAN
67	COMPLETE METERING SYSTEM DOES NOT AFFECTED BY EXTERNAL ELECTROMAFNETIC INTERFERRENCE (YES/NO)	BOOLEAN
68	REAL TIME QUARTZ CLOCK IS USED IN METER FOR MAINTAINING TIME (IST) AND CALENDAR (YES/NO)	BOOLEAN
69	RTC BATTERY IS NON – RECHARGEABLE TYPE (YES/NO)	BOOLEAN
70	RTC PRE - PROGRAMMED FOR 30 YEARS DAY / DATE WITHOUT ANY NECESSITY FOR CORRECTION (YES/NO)	BOOLEAN
71	MAXIMUM DRIFT TIME OF RTC PER YEAR	TEXT
72	DAY / DATE SETTING & SYNCHRONISATION POSSIBLE THROUGH PASSWORD / KEY CODE (YES/NO)	BOOLEAN
73	RTC BATTERY & BATTERY FOR DISPLAY ARE SEPARATE (YES/NO)	BOOLEAN
74	METER WITHSTANDS HIGH VOLTAGE & HIGH FREQUENCY SURGES WHICH ARE SIMILAR TO THE SURGES PRODUCED BY INDUCTION COIL TYPE INSTRUMENTS WITHOUT AFFECTING THE ACCURACY OF THE METER (YES/NO)	BOOLEAN
75	ACCURACY OF METER IS NOT AFFECTED WITH APPLICATION OF ABNORMAL VOLTAGE / FREQUENCY GENERATING DEVICE SUCH AS SPARK DISCHARGE OF APPROXIMATELY 35 KV (YES/NO)	BOOLEAN

76	SPARK DISCHARGE OF APPROXIMATELY 35 KV CARRIED OUT (YES/NO)	BOOLEAN
77	METER LOGS UNSATISFACTORY OR NON FUNCTIONING OF RTC BATTERY (YES/NO)	BOOLEAN
78	METERING PROTOCOL AS PER ANNEX E - CATEGORY C1 METERS OF IS: 15959 / 2011 AMENDED UPTO DATE (YES/NO)	BOOLEAN
79	RS 232 & OPTICAL PORTS FOR COMMUNICATION AND WITH SEALING ARRANGEMENT ARE PROVIDED (YES/NO)	BOOLEAN
80	DEFAULT & MINIMUM BAUD RATE OF RS 232 & OPTICAL PORTS IS 9600 BPS (YES/NO)	BOOLEAN
81	INTERNAL NI-MH OR LI-ION OR NI CD MAINTENANCE FREE BATTERY OF LONG LIFE OF 10 YEARS WITH PUSH BUTTON ARRANGEMENT FOR ACTIVATION OF BATTERY (YES/NO)	BOOLEAN
82	METER PCB IS WIRE LESS & IS MADE BY SURFACE MOUNTING TECHNOLOGY (YES/NO)	BOOLEAN
83	METER RECORDS & DISPLAY TOTAL ENERGY INCLUDING HARMONIC ENERGY (YES/NO)	BOOLEAN
84	NON VOLATILE MEMORY (NVM) WITH MINIMUM RETENTION PERIOD OF 10 YEARS IS PROVIDED (YES/NO)	BOOLEAN
85	6 (SIX) TOD TIME ZONES FOR ENERGY AND DEMAND ARE PROVIDED (YES/NO)	BOOLEAN
86	PROVISION FOR MD INTEGRATION PERIOD OF 15 MINUTE IS MADE (YES/NO)	BOOLEAN
87	PROVISION THROUGH COMMUNICATION DRIVEN RESET OF MD IS PROVIDED (YES/NO)	BOOLEAN
88	PROVISION TO RESET MD THROUGH LOCAL PUSH BUTTON IS PROVIDED (YES/NO)	BOOLEAN
89	PROVISION FOR AUTO RESET OF MD AT CERTAIN PREDEFINED PERIOD IS PROVIDED (YES/NO)	BOOLEAN
90	ALL ANTI TAMPER FEATURES ARE INCORPORATED IN METER AS PER SPECIFICATION (YES/NO)	BOOLEAN
91	METER LOGS TAMPER EVENTS AS PER SPECIFICATION (YES/NO)	BOOLEAN
92	TAMPER NO. & TAMPER EVENT IS REGISTERED IN TAMPER EVENT REGISTER (YES/NO)	BOOLEAN
93	THE NO. OF TIMES THE TAMPERING HAS BEEN DONE IS ALSO REGISTERED IN THE METER (YES/NO)	BOOLEAN
94	METER KEEPS RECORD OF TAMPER EVENTS FOR MINIMUM 200 EVENTS ON FIFO BASIS (YES/NO)	BOOLEAN
95	SUPPLY INDICATION IN THE FORM OF LED / LCD DISPLY IS PROVIDED (YES/NO)	BOOLEAN
96	SUPPLY INDICATION IS VISIBLE FROM THE FRONT OF THE METER (YES/NO)	BOOLEAN
97	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) OF MINIMUM 6 DIGITS AND MINIMUM 8 MM HEIGHT AND WIDE VIEWING ANGLE IS PROVIDED (YES/NO)	BOOLEAN
98	SIZE OF DIGITS	TEXT
99	AUTO DISPLAY CYCLING PUSH BUTTON WITH PERSISTENCE TIME OF 10 SECONDS IS PROVIDED (YES/NO)	BOOLEAN
100	PUSH BUTTON FOR HIGH RESOLUTION DISPLAY / ALTERNATE MODE OF DISPLAY IS PROVIDED (YES/NO)	BOOLEAN
101	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) IS SUITABLE FOR TEMPERATURE WITHSTAND OF 700C (YES/NO)	BOOLEAN
102	METER IS PROGRAMMED FOR (A) MD INTEGRATION PERIOD OF 15 MINUTES (YES/NO)	BOOLEAN

103	(A) AVERAGE POWER FACTOR WITH 2 DECIMAL DIGITS (YES/NO)	BOOLEAN
104	(A) AUTO RESET KVAMD AT 24.00 HRS. OF LAST DAY OF THE MONTH AS PER CLAUSE 10.00 (III) OF SPECIFICATION (YES/NO)	BOOLEAN
105	(A) ARRAY OF DATA TO BE RETAINED INSIDE THE METER MEMORY FOR THE LAST 32 DAYS FOR A CAPTURE PERIOD OF 15 MINUTES ON FIRST IN FIRST OUT BASIS (FIFO) (YES/NO)	BOOLEAN
106	SEQUENCE OF DISPLAY PARAMETERS IS AS PER SPECIFICATIONS (YES/NO)	BOOLEAN
107	METER RECORDS & DISPLAYS THE QUANTITES AS PER SPECIFICATION (YES/NO)	BOOLEAN
108	DISPLAY OTHER THAN SPECIFIED IS BLOCKED (YES/NO)	BOOLEAN
109	OTHER KVA MD VALUES ARE AVAILABLE IN RESET BACKUP DATA FOR 12 MONTHS.	BOOLEAN
110	METER DISPLAY RETURNS TO DEFAULT DISPLAY MODE IF 'PUSH BUTTON' IS NOT OPERATED FOR 15 SECONDS (YES/NO)	BOOLEAN
111	BILLING DATA IS AS PER SPECIFICATION	BOOLEAN
112	PROVISION FOR RECORDING HISTORY OF BILLING PARAMETERS FOR LAST 12 MONTHS (YES/NO)	BOOLEAN
113	PROVISION FOR LOAD SURVEY DATA FOR EVERY 15 MINUTES AND FOR PREVIOUS 32 DAYS FOR SPECIFIED PARAMETERS ON FIFO BASIS (YES/NO)	BOOLEAN
114	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	BOOLEAN
115	A DLMS COMPLIANT HHU AS PER ANNEX J OF IS: 15959 / 2011 IS PROVIDED (YES/NO)	BOOLEAN
116	PROVISION FOR AUTO POWER SAVE IS MADE ON HHU (YES/NO)	BOOLEAN
117	HHU HAS A MEMORY CAPACITY OF 512 MB SRAM (STATIC RAM) WITH BATTERY BACKUP & UPGRADEABLE AND BIOS / OS ON FLASH / EEPROM MEMORY OF 256 KB (RAM-512 MB, FLASH-2GB, SD CARD- 8GB WITH USB FACILITY (YES/NO)	BOOLEAN
118	HHU OFFERED IS FULLY TYPE TESTED AT APPROVED NABL LABORATORY FOR (a) TESTS OF MECHANICAL REQUIREMENT SUCH AS FREE FALL TEST, SHOCK TEST, VIBRATION TEST (YES/NO)	BOOLEAN
119	(a) TESTS OF CLIMATIC INFLUENCES SUCH AS TESTS OF PROTECTION AGAINST PENETRATION OF DUST AND WATER (IP 6X), DRY HEAT TEST, COLD TEST, DAMP HEAT CYCLIC TEST (YES/NO)	BOOLEAN
120	(a) TESTS FOR ELECTROMAGNETIC COMPATIBILITY (EMC) (YES/NO)	BOOLEAN
121	(a) TEST OF IMMUNITY TO ELECTROMAGNETIC HF FIELDS (YES/NO)	BOOLEAN
122	(a) RADIO INTERFERENCE MEASUREMENT (YES/NO)	BOOLEAN
123	TYPE TEST REPORT NOS. & DATE OF HHU (YES/NO)	BOOLEAN
124	BASE COMPUTER SOFTWARE IS "WINDOWS" BASED & USER FRIENDLY (YES/NO)	BOOLEAN
125	LICENSED COPIES OF BASE COMPUTER SOFTWARE ARE SUPPLIED FREE OF COST.	BOOLEAN
126	NO EDITING IN TRANSFERRED DATA IS POSSIBLE ON BASE COMPUTER AS WELL AS HHU BY ANY MEANS (YES/NO).	BOOLEAN
127	DOWNLOADING SOFTWARE IS SUBMITTED TO INSTALL ON OUR LAPTOP / PC FOR DIRECTLY DOWNLOADING DATA FROM METER WITHOUT THE USE OF HHU (YES/NO)	BOOLEAN
128	SOFTWARE PROVIDED ON LAPTOP/PC IS COMPATIBLE TO READ DATA FROM USB DRIVE (YES/NO)	BOOLEAN

129	CABLE WITH USB TERMINATION PROVIDED (YES/NO)	BOOLEAN
130	TOTAL TIME TAKEN FOR DOWNLOADING BILLING, TAMPER AND LOAD SURVEY DATA FOR 32 DAYS	TEXT
131	DOWNLOADING TIME OF ONLY BILLING DATA	TEXT
132	PERMANENT NATURE CONNECTION DIAGRAM OF METER IS SHOWN ON INSIDE PORTION OF THE TERMINAL COVER (YES/NO)	BOOLEAN
133	DISTINCTLY MARKED NAME PLATE WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS, CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL IS PROVIDED ON METER (YES/NO)	BOOLEAN
134	METER SERIAL NUMBER IS BAR CODED WITH SIZE OF NOT BE LESS THAN 35X5 MM ALONG WITH NUMERIC NUMBER (YES/NO)	BOOLEAN
135	CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL AND INDELIBLY AND DISTINCTLY MARKED WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS NAME PLATE IS PROVIDED ON METER (YES/NO)	BOOLEAN
136	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	BOOLEAN
137	CATEGORY OF METER AS “CATEGORY C1 – HT (PT / CT) CONSUMER METER” IN 3 MM BOLD FONT IS MARKED ON NAME PLATE (YES/NO)	BOOLEAN
138	WHETHER METER IS TYPE TESTED (YES/NO)	BOOLEAN
139	TYPE TEST REPORT NOS. & DATE OF METER	TEXT
140	METER PROTOCOL REPORT NOS. & DATES	TEXT
141	ALL ACCEPTANCE & ROUTINE TESTS, AS PER IS: 14697 / 1999 AMENDED UPTO DATE & THIS SPECIFICATION ARE CARRIED OUT ON METER & METER BODY (YES/NO)	BOOLEAN
142	TRANSPORTATION TEST IS CARRIED OUT (YES/NO)	BOOLEAN
143	METER & HHU ARE GUARANTEED FOR A PERIOD OF 66 MONTHS FROM THE DATE OF SUPPLY OR 60 MONTHS FROM THE DATE OF COMMISSIONING, WHICHEVER IS EARLIER (YES/NO)	BOOLEAN
144	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	BOOLEAN
145	FURNISH PRINCIPLE OF OPERATION OF METER OUTLINING THE METHODS AND STAGES OF COMPUTATIONS OF VARIOUS PARAMETERS STARTING FROM INPUT VOLTAGE AND CURRENT SIGNALS INCLUDING SAMPLING RATE IF APPLICABLE	TEXT
146	IN HOUSE TESTING FACILITY IS AVAILABLE FOR (A) AC VOLTAGE TEST (YES/NO)	BOOLEAN
147	(b) INSULATION RESISTANCE TEST (YES/NO)	BOOLEAN
148	(b) ACCURACY REQUIREMENT (YES/NO)	BOOLEAN
149	(b) TEST ON LIMITS OF ERRORS (YES/NO)	BOOLEAN
150	(b) TEST ON METER CONSTANT (YES/NO)	BOOLEAN
151	(b) TEST OF STARTING CONDITION (YES/NO)	BOOLEAN
152	(b) TEST OF NO-LOAD CONDITION (YES/NO)	BOOLEAN
153	(b) REPEATABILITY OF ERROR TEST (YES/NO)	BOOLEAN
154	(b) TEST OF POWER CONSUMPTION (YES/NO)	BOOLEAN
155	(b) TRANSPORTATION TEST (YES/NO)	BOOLEAN

156	(b) TAMPER CONDITIONS AS PER MSEDCL SPECIFICATION (YES/NO)	BOOLEAN
157	(b) GLOW WIRE TEST (YES/NO)	BOOLEAN
158	(b) LONG DURATION TEST (YES/NO)	BOOLEAN
159	(b) FLAMABILITY TEST (YES/NO)	BOOLEAN
160	(b) MANUFACTURER HAVE DULY CALIBRATED RSS METER OF CLASS 0.01 ACCURACY	BOOLEAN
161	15 (FIFTEEN) NOS. OF SAMPLE METERS & 1 (ONE) HHU AS PER TECHNICAL SPECIFICATIONS ARE SUBMITTED ALONGWYH OFFER (YES/NO)	BOOLEAN
162	MANUFACTURING PROCESS, ASSEMBLY, TESTING & MANUFACTURING ACTIVITIES AS PER TECHNICAL SPECIFICATION (YES/NO)	BOOLEAN
163	AGEING TEST FOR 72 HOURS AT 550 C TEMPERATURE AND ATMOSPHERIC HUMIDITY UNDER REAL LIFE CONDITION AT FULL LOAD CURRENT TO ELIMINATE INFANT MORTALITY IS CARRIED OUT (YES/NO)	BOOLEAN
164	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	BOOLEAN
165	QUALITY ASSURANCE PLAN AS PER SPECIFICATIONS IS ENCLOSED (YES/NO)	BOOLEAN
166	COMPONENT SPECIFICATION AS PER SPECIFICATION (YES/NO)	BOOLEAN

3P4wCT PT 5A AMR HT TOD meter of 0.2S F.

GTP Order Sequence	GTP Parameters	Date Type
1	MANUFACTURER'S / SUPPLIER'S NAME AND ADDRESS WITH WORKS ADDRESS	TEXT
2	MAKE AND TYPE OF METER	TEXT
3	APPLICABLE STANDARD IS AS PER IS: 14697 /1999 (AMENDED UPTO DATE), IS: 15959 / 2011, CBIP TECH REPORT 325 AMENDED UP TO DATE, IS: 15707 / 2006 (YES/NO)	BOOLEAN
4	METER BEARS ISI MARK (YES/NO)	BOOLEAN
5	FREQUENCY	TEXT
6	ACCURACY CLASS OF METER	TEXT
7	PT SECONDARY VOLTAGE	TEXT
8	RATED VOLTAGE	TEXT
9	VOLTAGE RANGE	TEXT
10	BASIC CURRENT (IB) OF METER	TEXT
11	MAXIMUM CONTINUOUS CURRENT (IMAX)	TEXT
12	SHORT TIME OVER CURRENT	TEXT
13	STARTING CURRENT OF METER	TEXT
14	CT RATIO OF METER	TEXT
15	POWER CONSUMPTION IN EACH VOLTAGE CIRCUIT	TEXT

16	POWER CONSUMPTION IN EACH CURRENT CIRCUIT	TEXT
17	POWER FACTOR	TEXT
18	POWER SUPPLY IS SMPS & MICRO CONTROL TYPE (YES/NO)	BOOLEAN
19	STANDARD REFERENCE TEMPERATURE OF METER	TEXT
20	MEAN TEMPERATURE CO-EFFICIENT	TEXT
21	KVA MD PROVIDED (YES/NO)	BOOLEAN
22	OPAQUE METER BASE & TRANSPARENT TOP COVER IS MADE OUT OF, UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE MATERIAL SO AS TO GIVE IT AND QUALITIES. (YES/NO)	BOOLEAN
23	POLY CARBONATE BODY OF METER CONFORMS TO IS: 11731 (FV-2 CATEGORY) (YES/NO)	BOOLEAN
24	POLY CARBONATE BODY MEETS TEST REQUIREMENT OF (a) HEAT DEFLECTION TEST AS PER ISO 75 > 1500C (YES/NO)	BOOLEAN
25	(a) GLOW WIRE TEST AS PER IS: 11000 (PART 2/SEC-1) 1984 OR IEC PUB 60695-2-12 AT 9000C (YES/NO)	BOOLEAN
26	(a) BALL PRESSURE TEST AS PER IEC--60695-10-2 (YES/NO)	BOOLEAN
27	(a) FLAMMABILITY TEST AS PER UL 94 OR IS 11731 (PART-2) 1986 (YES/NO)	BOOLEAN
28	TYPE TEST REPORT NOS. & DATE OF ABOVE (A) TO (D)	TEXT
29	PHYSICAL WATER ABSORPTION VALUE OF METER BODY	TEXT
30	THERMAL HDDT VALUE OF METER BODY	TEXT
31	TENSILE STRENGTH OF METER BODY	TEXT
32	FLEXURE STRENGTH OF METER BODY	TEXT
33	MODULUS OF ELASTICITY OF METER BODY	TEXT
34	IZOD IMPACT STRENGTH OF METER BODY NOTCHED AT 23°C	TEXT
35	POLY-CARBONATE OPAQUE BASE AND TRANSPARENT TOP COVER IS ULTRA-SONICALLY WELDED (CONTINUOUS WELDING) (YES/NO)	BOOLEAN
36	THICKNESS OF MATERIAL FOR METER COVER & BASE	TEXT
37	METER BODY TYPE TESTED FOR IP51 DEGREE OF PROTECTION AS PER IS: 12063 AGAINST INGRESS OF DUST, MOISTURE & VERMIN. (YES/NO)	BOOLEAN
38	IP51 DEGREE OF PROTECTION AS PER IS: 12063 TEST CERTIFICATE NO. & DATE	TEXT
39	METER COVER IS SECURED TO BASE BY MEANS OF SEALABLE UNIDIRECTIONAL CAPTIVE SCREWS WITH TWO HOLES. (YES/NO)	BOOLEAN
40	TERMINAL BLOCK IS MADE FROM HIGH QUALITY NON-HYGROSCOPIC, FIRE RETARDANT, REINFORCED POLYCARBONATE / NON-BAKELITE MATERIAL (YES/NO)	BOOLEAN
41	MATERIAL OF WHICH THE TERMINAL BLOCK IS MADE IS CAPABLE OF PASSING THE TESTS GIVEN IN IS: 1336O (PART 6/SEC 17), ISO 75-1 (1993) & ISO 75-2 (1993) FOR A TEMPERATURE OF 1350C AND A PRESSURE OF 1.8 MPA (METHOD A) (YES/NO)	BOOLEAN
42	TYPE TEST REPORT NOS. & DATE OF ABOVE	TEXT
43	TWO SCREWS ARE PROVIDED IN EACH CURRENT & POTENTIAL TERMINAL FOR EFFECTIVELY CLAMPING THE EXTERNAL LEADS OR THIMBLES IN TERMINAL BLOCK (YES/NO)	BOOLEAN
44	MINIMUM INTERNAL DIAMETER OF TERMINAL HOLE	TEXT

45	TERMINATION ARRANGEMENT IS PROVIDED WITH AN EXTENDED TRANSPARENT TERMINAL COVER AS PER CLAUSE NUMBER 6.5.2 OF IS: 14697 / 1999 (AMENDED UPTO DATE) IRRESPECTIVE OF REAR CONNECTIONS (YES/NO)	BOOLEAN
46	TERMINAL COVER IS UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE & IS MADE OF THE SAME MATERIAL AS THAT OF METER BODY (YES/NO)	BOOLEAN
47	TERMINAL COVER IS TRANSPARENT (YES/NO)	BOOLEAN
48	TERMINAL COVER ENCLOSES ACTUAL TERMINALS, CONDUCTOR FIXING SCREWS AND A SUITABLE LENGTH OF EXTERNAL CONDUCTORS AND THEIR INSULATION (YES/NO)	BOOLEAN
49	TERMINAL COVER IS PROVIDED WITH ONE SIDE HINGE/TWO TOP HINGES (YES/NO)	BOOLEAN
50	INDEPENDENT SEALING PROVISION IS MADE AGAINST OPENING OF THE TERMINAL COVER AND FRONT COVER TO PREVENT UNAUTHORIZED TAMPERING (YES/NO)	BOOLEAN
51	BIDIRECTIONAL SCREWS WITH TWO HOLES FOR SEALING PURPOSE OF TERMINALCOVER ARE PROVIDED (YES/NO)	BOOLEAN
52	FIXING SCREWS USED ON THE TERMINAL COVER FOR FIXING AND SEALING ARE HELD CAPTIVE IN THE TERMINAL COVER (YES/NO)	BOOLEAN
53	PROPER SIZE OF GROOVES PROVIDED AT BOTTOM OF TERMINAL COVER FOR INCOMING SERVICE CONNECTIONS (YES/NO)	BOOLEAN
54	PUSH BUTTONS ARE PROVIDED AS PER SPECIFICATION (YES/NO)	BOOLEAN
55	PROVISION FOR AT LEAST TWO SEALS TO BE PUT BY UTILITY USER (YES/NO)	BOOLEAN
56	PROVISION OF DISPLAY OF HIGH RESOLUTION READING / ALTERNATE MODE (YES/NO)	BOOLEAN
57	OUTPUT DEVICE FOR TESTING OF METER IN THE FORM OF BLINKING LED WITH CONSTANT PULSE RATE IS PROVIDED (YES/NO)	BOOLEAN
58	RESOLUTION OF THE TEST OUTPUT DEVICE IS SUFFICIENT TO ENABLE THE STARTING CURRENT TEST IN LESS THAN 10 MINUTES (YES/NO)	BOOLEAN
59	PULSE RATE OF OUTPUT DEVICE IS PROGRAMMED ACCORDING TO PRIMARY VALUES OF VOLTAGE & CURRENT & IS PROVIDED ON NAMEPLATE (YES/NO)	BOOLEAN
60	METER CONSTANT IS INDELIBLY PRINTED ON THE NAME PLATE OF THE METER (YES/NO)	BOOLEAN
61	METER ACCURACY NOT AFFECTED BY AC / DC MAGNETIC FIELD AS PER CBIP 325 (YES/NO)	BOOLEAN
62	THE METER ACCURACY SHALL NOT BE AFFECTED BY EXTERNAL AC / DC / PERMANENT MAGNETIC FIELD AS PER CBIP TECHNICAL REPORT 325 WITH LATEST AMENDMENTS.	BOOLEAN
63	METER IS CAPABLE TO WITHSTAND AND NOT GET DAMAGED IF PHASE TO PHASE VOLTAGE IS APPLIED BETWEEN PHASES & NEUTRAL FOR FIVE MINUTES (YES/NO)	BOOLEAN
64	POWER SUPPLY UNIT IS MICRO CONTROL TYPE (SMPS) (YES/NO)	BOOLEAN
65	NON SPECIFIED DISPLAY PARAMETERS IN ARE BLOCKED AND NOT ACCESSIBLE FOR REPROGRAMMING AT SITE (YES/NO)	BOOLEAN
66	CTS ARE PROVIDED WITH MAGNETIC SHIELDING AND ARE TESTED SEPARATELY PRIOR TO ASSEMBLY (YES/NO)	BOOLEAN
67	COMPLETE METERING SYSTEM DOES NOT AFFECTED BY EXTERNAL ELECTROMAFNETIC INTERFERRENCE (YES/NO)	BOOLEAN
68	REAL TIME QUARTZ CLOCK IS USED IN METER FOR MAINTAINING TIME (IST) AND CALENDAR (YES/NO)	BOOLEAN
69	RTC BATTERY IS NON – RECHARGEABLE TYPE (YES/NO)	BOOLEAN

70	RTC PRE - PROGRAMMED FOR 30 YEARS DAY / DATE WITHOUT ANY NECESSITY FOR CORRECTION (YES/NO)	BOOLEAN
71	MAXIMUM DRIFT TIME OF RTC PER YEAR	TEXT
72	DAY / DATE SETTING & SYNCHRONISATION POSSIBLE THROUGH PASSWORD / KEY CODE (YES/NO)	BOOLEAN
73	RTC BATTERY & BATTERY FOR DISPLAY ARE SEPARATE (YES/NO)	BOOLEAN
74	METER WITHSTANDS HIGH VOLTAGE & HIGH FREQUENCY SURGES WHICH ARE SIMILAR TO THE SURGES PRODUCED BY INDUCTION COIL TYPE INSTRUMENTS WITHOUT AFFECTING THE ACCURACY OF THE METER (YES/NO)	BOOLEAN
75	ACCURACY OF METER IS NOT AFFECTED WITH APPLICATION OF ABNORMAL VOLTAGE / FREQUENCY GENERATING DEVICE SUCH AS SPARK DISCHARGE OF APPROXIMATELY 35 KV (YES/NO)	BOOLEAN
76	SPARK DISCHARGE OF APPROXIMATELY 35 KV CARRIED OUT (YES/NO)	BOOLEAN
77	METER LOGS UNSATISFACTORY OR NON FUNCTIONING OF RTC BATTERY (YES/NO)	BOOLEAN
78	METERING PROTOCOL AS PER ANNEX E - CATEGORY C1 METERS OF IS: 15959 / 2011 AMENDED UPTO DATE (YES/NO)	BOOLEAN
79	RS 232 & OPTICAL PORTS FOR COMMUNICATION AND WITH SEALING ARRANGEMENT ARE PROVIDED (YES/NO)	BOOLEAN
80	DEFAULT & MINIMUM BAUD RATE OF RS 232 & OPTICAL PORTS IS 9600 BPS (YES/NO)	BOOLEAN
81	INTERNAL NI-MH OR LI-ION OR NI CD MAINTENANCE FREE BATTERY OF LONG LIFE OF 10 YEARS WITH PUSH BUTTON ARRANGEMENT FOR ACTIVATION OF BATTERY (YES/NO)	BOOLEAN
82	METER PCB IS WIRE LESS & IS MADE BY SURFACE MOUNTING TECHNOLOGY (YES/NO)	BOOLEAN
83	METER RECORDS & DISPLAY TOTAL ENERGY INCLUDING HARMONIC ENERGY (YES/NO)	BOOLEAN
84	NON VOLATILE MEMORY (NVM) WITH MINIMUM RETENTION PERIOD OF 10 YEARS IS PROVIDED (YES/NO)	BOOLEAN
85	6 (SIX) TOD TIME ZONES FOR ENERGY AND DEMAND ARE PROVIDED (YES/NO)	BOOLEAN
86	PROVISION FOR MD INTEGRATION PERIOD OF 15 MINUTE IS MADE (YES/NO)	BOOLEAN
87	PROVISION THROUGH COMMUNICATION DRIVEN RESET OF MD IS PROVIDED (YES/NO)	BOOLEAN
88	PROVISION TO RESET MD THROUGH LOCAL PUSH BUTTON IS PROVIDED (YES/NO)	BOOLEAN
89	PROVISION FOR AUTO RESET OF MD AT CERTAIN PREDEFINED PERIOD IS PROVIDED (YES/NO)	BOOLEAN
90	ALL ANTI TAMPER FEATURES ARE INCORPORATED IN METER AS PER SPECIFICATION (YES/NO)	BOOLEAN
91	METER LOGS TAMPER EVENTS AS PER SPECIFICATION (YES/NO)	BOOLEAN
92	TAMPER NO. & TAMPER EVENT IS REGISTERED IN TAMPER EVENT REGISTER (YES/NO)	BOOLEAN
93	THE NO. OF TIMES THE TAMPERING HAS BEEN DONE IS ALSO REGISTERED IN THE METER (YES/NO)	BOOLEAN
94	METER KEEPS RECORD OF TAMPER EVENTS FOR MINIMUM 200 EVENTS ON FIFO BASIS (YES/NO)	BOOLEAN
95	SUPPLY INDICATION IN THE FORM OF LED / LCD DISPLY IS PROVIDED (YES/NO)	BOOLEAN
96	SUPPLY INDICATION IS VISIBLE FROM THE FRONT OF THE METER (YES/NO)	BOOLEAN

97	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) OF MINIMUM 6 DIGITS AND MINIMUM 8 MM HEIGHT AND WIDE VIEWING ANGLE IS PROVIDED (YES/NO)	BOOLEAN
98	SIZE OF DIGITS	TEXT
99	AUTO DISPLAY CYCLING PUSH BUTTON WITH PERSISTENCE TIME OF 10 SECONDS IS PROVIDED (YES/NO)	BOOLEAN
100	PUSH BUTTON FOR HIGH RESOLUTION DISPLAY / ALTERNATE MODE OF DISPLAY IS PROVIDED (YES/NO)	BOOLEAN
101	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) IS SUITABLE FOR TEMPERATURE WITHSTAND OF 700C (YES/NO)	BOOLEAN
102	METER IS PROGRAMMED FOR (A) MD INTEGRATION PERIOD OF 15 MINUTES (YES/NO)	BOOLEAN
103	(A) AVERAGE POWER FACTOR WITH 2 DECIMAL DIGITS (YES/NO)	BOOLEAN
104	(A) AUTO RESET KVAMD AT 24.00 HRS. OF LAST DAY OF THE MONTH AS PER CLAUSE 10.00 (III) OF SPECIFICATION (YES/NO)	BOOLEAN
105	(A) ARRAY OF DATA TO BE RETAINED INSIDE THE METER MEMORY FOR THE LAST 32 DAYS FOR A CAPTURE PERIOD OF 15 MINUTES ON FIRST IN FIRST OUT BASIS (FIFO) (YES/NO)	BOOLEAN
106	SEQUENCE OF DISPLAY PARAMETERS IS AS PER SPECIFICATIONS (YES/NO)	BOOLEAN
107	METER RECORDS & DISPLAYS THE QUANTITES AS PER SPECIFICATION (YES/NO)	BOOLEAN
108	DISPLAY OTHER THAN SPECIFIED IS BLOCKED (YES/NO)	BOOLEAN
109	OTHER KVA MD VALUES ARE AVAILABLE IN RESET BACKUP DATA FOR 12 MONTHS.	BOOLEAN
110	METER DISPLAY RETURNS TO DEFAULT DISPLAY MODE IF 'PUSH BUTTON' IS NOT OPERATED FOR 15 SECONDS (YES/NO)	BOOLEAN
111	BILLING DATA IS AS PER SPECIFICATION	BOOLEAN
112	PROVISION FOR RECORDING HISTORY OF BILLING PARAMETERS FOR LAST 12 MONTHS (YES/NO)	BOOLEAN
113	PROVISION FOR LOAD SURVEY DATA FOR EVERY 15 MINUTES AND FOR PREVIOUS 32 DAYS FOR SPECIFIED PARAMETERS ON FIFO BASIS (YES/NO)	BOOLEAN
114	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	BOOLEAN
115	A DLMS COMPLIANT HHU AS PER ANNEX J OF IS: 15959 / 2011 IS PROVIDED (YES/NO)	BOOLEAN
116	PROVISION FOR AUTO POWER SAVE IS MADE ON HHU (YES/NO)	BOOLEAN
117	HHU HAS A MEMORY CAPACITY OF 512 MB SRAM (STATIC RAM) WITH BATTERY BACKUP & UPGRADEABLE AND BIOS / OS ON FLASH / EEPROM MEMORY OF 256 KB (RAM-512 MB, FLASH-2GB, SD CARD- 8GB WITH USB FACILITY (YES/NO)	BOOLEAN
118	HHU OFFERED IS FULLY TYPE TESTED AT APPROVED NABL LABORATORY FOR (a) TESTS OF MECHANICAL REQUIREMENT SUCH AS FREE FALL TEST, SHOCK TEST, VIBRATION TEST (YES/NO)	BOOLEAN
119	(a) TESTS OF CLIMATIC INFLUENCES SUCH AS TESTS OF PROTECTION AGAINST PENETRATION OF DUST AND WATER (IP 6X), DRY HEAT TEST, COLD TEST, DAMP HEAT CYCLIC TEST (YES/NO)	BOOLEAN
120	(a) TESTS FOR ELECTROMAGNETIC COMPATIBILITY (EMC) (YES/NO)	BOOLEAN
121	(a) TEST OF IMMUNITY TO ELECTROMAGNETIC HF FIELDS (YES/NO)	BOOLEAN
122	(a) RADIO INTERFERENCE MEASUREMENT (YES/NO)	BOOLEAN

123	TYPE TEST REPORT NOS. & DATE OF HHU (YES/NO)	BOOLEAN
124	BASE COMPUTER SOFTWARE IS "WINDOWS" BASED & USER FRIENDLY (YES/NO)	BOOLEAN
125	LICENSED COPIES OF BASE COMPUTER SOFTWARE ARE SUPPLIED FREE OF COST.	BOOLEAN
126	NO EDITING IN TRANSFERRED DATA IS POSSIBLE ON BASE COMPUTER AS WELL AS HHU BY ANY MEANS (YES/NO).	BOOLEAN
127	DOWNLOADING SOFTWARE IS SUBMITTED TO INSTALL ON OUR LAPTOP / PC FOR DIRECTLY DOWNLOADING DATA FROM METER WITHOUT THE USE OF HHU (YES/NO)	BOOLEAN
128	SOFTWARE PROVIDED ON LAPTOP/PC IS COMPATIBLE TO READ DATA FROM USB DRIVE (YES/NO)	BOOLEAN
129	CABLE WITH USB TERMINATION PROVIDED (YES/NO)	BOOLEAN
130	TOTAL TIME TAKEN FOR DOWNLOADING BILLING, TAMPER AND LOAD SURVEY DATA FOR 32 DAYS	TEXT
131	DOWNLOADING TIME OF ONLY BILLING DATA	TEXT
132	PERMANENT NATURE CONNECTION DIAGRAM OF METER IS SHOWN ON INSIDE PORTION OF THE TERMINAL COVER (YES/NO)	BOOLEAN
133	DISTINCTLY MARKED NAME PLATE WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS, CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL IS PROVIDED ON METER (YES/NO)	BOOLEAN
134	METER SERIAL NUMBER IS BAR CODED WITH SIZE OF NOT BE LESS THAN 35X5 MM ALONG WITH NUMERIC NUMBER (YES/NO)	BOOLEAN
135	CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL AND INDELIBLY AND DISTINCTLY MARKED WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS NAME PLATE IS PROVIDED ON METER (YES/NO)	BOOLEAN
136	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	BOOLEAN
137	CATEGORY OF METER AS “CATEGORY C1 – HT (PT / CT) CONSUMER METER” IN 3 MM BOLD FONT IS MARKED ON NAME PLATE (YES/NO)	BOOLEAN
138	WHETHER METER IS TYPE TESTED (YES/NO)	BOOLEAN
139	TYPE TEST REPORT NOS. & DATE OF METER	TEXT
140	METER PROTOCOL REPORT NOS. & DATES	TEXT
141	ALL ACCEPTANCE & ROUTINE TESTS, AS PER IS: 14697 / 1999 AMENDED UPTO DATE & THIS SPECIFICATION ARE CARRIED OUT ON METER & METER BODY (YES/NO)	BOOLEAN
142	TRANSPORTATION TEST IS CARRIED OUT (YES/NO)	BOOLEAN
143	METER & HHU ARE GUARANTEED FOR A PERIOD OF 66 MONTHS FROM THE DATE OF SUPPLY OR 60 MONTHS FROM THE DATE OF COMMISSIONING, WHICHEVER IS EARLIER (YES/NO)	BOOLEAN
144	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	BOOLEAN
145	FURNISH PRINCIPLE OF OPERATION OF METER OUTLINING THE METHODS AND STAGES OF COMPUTATIONS OF VARIOUS PARAMETERS STARTING FROM INPUT VOLTAGE AND CURRENT SIGNALS INCLUDING SAMPLING RATE IF APPLICABLE	TEXT
146	IN HOUSE TESTING FACILITY IS AVAILABLE FOR (A) AC VOLTAGE TEST (YES/NO)	BOOLEAN
147	(b) INSULATION RESISTANCE TEST (YES/NO)	BOOLEAN

148	(b) ACCURACY REQUIREMENT (YES/NO)	BOOLEAN
149	(b) TEST ON LIMITS OF ERRORS (YES/NO)	BOOLEAN
150	(b) TEST ON METER CONSTANT (YES/NO)	BOOLEAN
151	(b) TEST OF STARTING CONDITION (YES/NO)	BOOLEAN
152	(b) TEST OF NO-LOAD CONDITION (YES/NO)	BOOLEAN
153	(b) REPEATABILITY OF ERROR TEST (YES/NO)	BOOLEAN
154	(b) TEST OF POWER CONSUMPTION (YES/NO)	BOOLEAN
155	(b) TRANSPORTATION TEST (YES/NO)	BOOLEAN
156	(b) TAMPER CONDITIONS AS PER MSEDCL SPECIFICATION (YES/NO)	BOOLEAN
157	(b) GLOW WIRE TEST (YES/NO)	BOOLEAN
158	(b) LONG DURATION TEST (YES/NO)	BOOLEAN
159	(b) FLAMABILITY TEST (YES/NO)	BOOLEAN
160	(b) MANUFACTURER HAVE DULY CALIBRATED RSS METER OF CLASS 0.01 ACCURACY	BOOLEAN
161	15 (FIFTEEN) NOS. OF SAMPLE METERS & 1 (ONE) HHU AS PER TECHNICAL SPECIFICATIONS ARE SUBMITTED ALONGWYH OFFER (YES/NO)	BOOLEAN
162	MANUFACTURING PROCESS, ASSEMBLY, TESTING & MANUFACTURING ACTIVITIES AS PER TECHNICAL SPECIFICATION (YES/NO)	BOOLEAN
163	AGEING TEST FOR 72 HOURS AT 550 C TEMPERATURE AND ATMOSPHERIC HUMIDITY UNDER REAL LIFE CONDITION AT FULL LOAD CURRENT TO ELIMINATE INFANT MORTALITY IS CARRIED OUT (YES/NO)	BOOLEAN
164	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	BOOLEAN
165	QUALITY ASSURANCE PLAN AS PER SPECIFICATIONS IS ENCLOSED (YES/NO)	BOOLEAN
166	COMPONENT SPECIFICATION AS PER SPECIFICATION (YES/NO)	BOOLEAN

3P4WCT/PT 1A AMR HT TOD MET 0.2S F.L-A

GTP Order Sequence	GTP Parameters	Date Type
1	MANUFACTURER'S / SUPPLIER'S NAME AND ADDRESS WITH WORKS ADDRESS	TEXT
2	MAKE AND TYPE OF METER	TEXT
3	APPLICABLE STANDARD IS AS PER IS: 14697 /1999 (AMENDED UPTO DATE), IS: 15959 / 2011, CBIP TECH REPORT 325 AMENDED UP TO DATE, IS: 15707 / 2006 (YES/NO)	BOOLEAN
4	METER BEARS ISI MARK (YES/NO)	BOOLEAN
5	FREQUENCY	TEXT
6	ACCURACY CLASS OF METER	TEXT
7	PT SECONDARY VOLTAGE	TEXT

8	RATED VOLTAGE	TEXT
9	VOLTAGE RANGE	TEXT
10	BASIC CURRENT (IB) OF METER	TEXT
11	MAXIMUM CONTINUOUS CURRENT (IMAX)	TEXT
12	SHORT TIME OVER CURRENT	TEXT
13	STARTING CURRENT OF METER	TEXT
14	CT RATIO OF METER	TEXT
15	POWER CONSUMPTION IN EACH VOLTAGE CIRCUIT	TEXT
16	POWER CONSUMPTION IN EACH CURRENT CIRCUIT	TEXT
17	POWER FACTOR	TEXT
18	POWER SUPPLY IS SMPS & MICRO CONTROL TYPE (YES/NO)	BOOLEAN
19	STANDARD REFERENCE TEMPERATURE OF METER	TEXT
20	MEAN TEMPERATURE CO-EFFICIENT	TEXT
21	KVA MD PROVIDED (YES/NO)	BOOLEAN
22	OPAQUE METER BASE & TRANSPARENT TOP COVER IS MADE OUT OF, UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE MATERIAL SO AS TO GIVE IT AND QUALITIES. (YES/NO)	BOOLEAN
23	POLY CARBONATE BODY OF METER CONFORMS TO IS: 11731 (FV-2 CATEGORY) (YES/NO)	BOOLEAN
24	POLY CARBONATE BODY MEETS TEST REQUIREMENT OF (a) HEAT DEFLECTION TEST AS PER ISO 75 > 1500C (YES/NO)	BOOLEAN
25	(a) GLOW WIRE TEST AS PER IS: 11000 (PART 2/SEC-1) 1984 OR IEC PUB 60695-2-12 AT 9000C (YES/NO)	BOOLEAN
26	(a) BALL PRESSURE TEST AS PER IEC--60695-10-2 (YES/NO)	BOOLEAN
27	(a) FLAMMABILITY TEST AS PER UL 94 OR IS 11731 (PART-2) 1986 (YES/NO)	BOOLEAN
28	TYPE TEST REPORT NOS. & DATE OF ABOVE (A) TO (D)	TEXT
29	PHYSICAL WATER ABSORPTION VALUE OF METER BODY	TEXT
30	THERMAL HDDT VALUE OF METER BODY	TEXT
31	TENSILE STRENGTH OF METER BODY	TEXT
32	FLEXURE STRENGTH OF METER BODY	TEXT
33	MODULUS OF ELASTICITY OF METER BODY	TEXT
34	IZOD IMPACT STRENGTH OF METER BODY NOTCHED AT 23°C	TEXT
35	POLY-CARBONATE OPAQUE BASE AND TRANSPARENT TOP COVER IS ULTRA-SONICALLY WELDED (CONTINUOUS WELDING) (YES/NO)	BOOLEAN
36	THICKNESS OF MATERIAL FOR METER COVER & BASE	TEXT
37	METER BODY TYPE TESTED FOR IP51 DEGREE OF PROTECTION AS PER IS: 12063 AGAINST INGRESS OF DUST, MOISTURE & VERMIN. (YES/NO)	BOOLEAN
38	IP51 DEGREE OF PROTECTION AS PER IS: 12063 TEST CERTIFICATE NO. & DATE	TEXT
39	METER COVER IS SECURED TO BASE BY MEANS OF SEALABLE UNIDIRECTIONAL CAPTIVE SCREWS WITH TWO HOLES. (YES/NO)	BOOLEAN

40	TERMINAL BLOCK IS MADE FROM HIGH QUALITY NON-HYGROSCOPIC, FIRE RETARDANT, REINFORCED POLYCARBONATE / NON-BAKELITE MATERIAL (YES/NO)	BOOLEAN
41	MATERIAL OF WHICH THE TERMINAL BLOCK IS MADE IS CAPABLE OF PASSING THE TESTS GIVEN IN IS: 1336O (PART 6/SEC 17), ISO 75-1 (1993) & ISO 75-2 (1993) FOR A TEMPERATURE OF 1350C AND A PRESSURE OF 1.8 MPA (METHOD A) (YES/NO)	BOOLEAN
42	TYPE TEST REPORT NOS. & DATE OF ABOVE	TEXT
43	TWO SCREWS ARE PROVIDED IN EACH CURRENT & POTENTIAL TERMINAL FOR EFFECTIVELY CLAMPING THE EXTERNAL LEADS OR THIMBLES IN TERMINAL BLOCK (YES/NO)	BOOLEAN
44	MINIMUM INTERNAL DIAMETER OF TERMINAL HOLE	TEXT
45	TERMINATION ARRANGEMENT IS PROVIDED WITH AN EXTENDED TRANSPARENT TERMINAL COVER AS PER CLAUSE NUMBER 6.5.2 OF IS: 14697 / 1999 (AMENDED UPTO DATE) IRRESPECTIVE OF REAR CONNECTIONS (YES/NO)	BOOLEAN
46	TERMINAL COVER IS UNBREAKABLE, TOUGH, NON -BREAKABLE, HIGH GRADE, FIRE RESISTANT POLYCARBONATE & IS MADE OF THE SAME MATERIAL AS THAT OF METER BODY (YES/NO)	BOOLEAN
47	TERMINAL COVER IS TRANSPARENT (YES/NO)	BOOLEAN
48	TERMINAL COVER ENCLOSES ACTUAL TERMINALS, CONDUCTOR FIXING SCREWS AND A SUITABLE LENGTH OF EXTERNAL CONDUCTORS AND THEIR INSULATION (YES/NO)	BOOLEAN
49	TERMINAL COVER IS PROVIDED WITH ONE SIDE HINGE/TWO TOP HINGES (YES/NO)	BOOLEAN
50	INDEPENDENT SEALING PROVISION IS MADE AGAINST OPENING OF THE TERMINAL COVER AND FRONT COVER TO PREVENT UNAUTHORIZED TAMPERING (YES/NO)	BOOLEAN
51	BIDIRECTIONAL SCREWS WITH TWO HOLES FOR SEALING PURPOSE OF TERMINALCOVER ARE PROVIDED (YES/NO)	BOOLEAN
52	FIXING SCREWS USED ON THE TERMINAL COVER FOR FIXING AND SEALING ARE HELD CAPTIVE IN THE TERMINAL COVER (YES/NO)	BOOLEAN
53	PROPER SIZE OF GROOVES PROVIDED AT BOTTOM OF TERMINAL COVER FOR INCOMING SERVICE CONNECTIONS (YES/NO)	BOOLEAN
54	PUSH BUTTONS ARE PROVIDED AS PER SPECIFICATION (YES/NO)	BOOLEAN
55	PROVISION FOR AT LEAST TWO SEALS TO BE PUT BY UTILITY USER (YES/NO)	BOOLEAN
56	PROVISION OF DISPLAY OF HIGH RESOLUTION READING / ALTERNATE MODE (YES/NO)	BOOLEAN
57	OUTPUT DEVICE FOR TESTING OF METER IN THE FORM OF BLINKING LED WITH CONSTANT PULSE RATE IS PROVIDED (YES/NO)	BOOLEAN
58	RESOLUTION OF THE TEST OUTPUT DEVICE IS SUFFICIENT TO ENABLE THE STARTING CURRENT TEST IN LESS THAN 10 MINUTES (YES/NO)	BOOLEAN
59	PULSE RATE OF OUTPUT DEVICE IS PROGRAMMED ACCORDING TO PRIMARY VALUES OF VOLTAGE & CURRENT & IS PROVIDED ON NAMEPLATE (YES/NO)	BOOLEAN
60	METER CONSTANT IS INDELIBLY PRINTED ON THE NAME PLATE OF THE METER (YES/NO)	BOOLEAN
61	METER ACCURACY NOT AFFECTED BY AC / DC MAGNETIC FIELD AS PER CBIP 325 (YES/NO)	BOOLEAN
62	THE METER ACCURACY SHALL NOT BE AFFECTED BY EXTERNAL AC / DC / PERMANENT MAGNETIC FIELD AS PER CBIP TECHNICAL REPORT 325 WITH LATEST AMENDMENTS.	BOOLEAN
63	METER IS CAPABLE TO WITHSTAND AND NOT GET DAMAGED IF PHASE TO PHASE VOLTAGE IS APPLIED BETWEEN PHASES & NEUTRAL FOR FIVE MINUTES (YES/NO)	BOOLEAN

64	POWER SUPPLY UNIT IS MICRO CONTROL TYPE (SMPS) (YES/NO)	BOOLEAN
65	NON SPECIFIED DISPLAY PARAMETERS IN ARE BLOCKED AND NOT ACCESSIBLE FOR REPROGRAMMING AT SITE (YES/NO)	BOOLEAN
66	CTS ARE PROVIDED WITH MAGNETIC SHIELDING AND ARE TESTED SEPARATELY PRIOR TO ASSEMBLY (YES/NO)	BOOLEAN
67	COMPLETE METERING SYSTEM DOES NOT AFFECTED BY EXTERNAL ELECTROMAFNETIC INTERFERRENCE (YES/NO)	BOOLEAN
68	REAL TIME QUARTZ CLOCK IS USED IN METER FOR MAINTAINING TIME (IST) AND CALENDAR (YES/NO)	BOOLEAN
69	RTC BATTERY IS NON – RECHARGEABLE TYPE (YES/NO)	BOOLEAN
70	RTC PRE - PROGRAMMED FOR 30 YEARS DAY / DATE WITHOUT ANY NECESSITY FOR CORRECTION (YES/NO)	BOOLEAN
71	MAXIMUM DRIFT TIME OF RTC PER YEAR	TEXT
72	DAY / DATE SETTING & SYNCHRONISATION POSSIBLE THROUGH PASSWORD / KEY CODE (YES/NO)	BOOLEAN
73	RTC BATTERY & BATTERY FOR DISPLAY ARE SEPARATE (YES/NO)	BOOLEAN
74	METER WITHSTANDS HIGH VOLTAGE & HIGH FREQUENCY SURGES WHICH ARE SIMILAR TO THE SURGES PRODUCED BY INDUCTION COIL TYPE INSTRUMENTS WITHOUT AFFECTING THE ACCURACY OF THE METER (YES/NO)	BOOLEAN
75	ACCURACY OF METER IS NOT AFFECTED WITH APPLICATION OF ABNORMAL VOLTAGE / FREQUENCY GENERATING DEVICE SUCH AS SPARK DISCHARGE OF APPROXIMATELY 35 KV (YES/NO)	BOOLEAN
76	SPARK DISCHARGE OF APPROXIMATELY 35 KV CARRIED OUT (YES/NO)	BOOLEAN
77	METER LOGS UNSATISFACTORY OR NON FUNCTIONING OF RTC BATTERY (YES/NO)	BOOLEAN
78	METERING PROTOCOL AS PER ANNEX E - CATEGORY C1 METERS OF IS: 15959 / 2011 AMENDED UPTO DATE (YES/NO)	BOOLEAN
79	RS 232 & OPTICAL PORTS FOR COMMUNICATION AND WITH SEALING ARRANGEMENT ARE PROVIDED (YES/NO)	BOOLEAN
80	DEFAULT & MINIMUM BAUD RATE OF RS 232 & OPTICAL PORTS IS 9600 BPS (YES/NO)	BOOLEAN
81	INTERNAL NI-MH OR LI-ION OR NI CD MAINTENANCE FREE BATTERY OF LONG LIFE OF 10 YEARS WITH PUSH BUTTON ARRANGEMENT FOR ACTIVATION OF BATTERY (YES/NO)	BOOLEAN
82	METER PCB IS WIRE LESS & IS MADE BY SURFACE MOUNTING TECHNOLOGY (YES/NO)	BOOLEAN
83	METER RECORDS & DISPLAY TOTAL ENERGY INCLUDING HARMONIC ENERGY (YES/NO)	BOOLEAN
84	NON VOLATILE MEMORY (NVM) WITH MINIMUM RETENTION PERIOD OF 10 YEARS IS PROVIDED (YES/NO)	BOOLEAN
85	6 (SIX) TOD TIME ZONES FOR ENERGY AND DEMAND ARE PROVIDED (YES/NO)	BOOLEAN
86	PROVISION FOR MD INTEGRATION PERIOD OF 15 MINUTE IS MADE (YES/NO)	BOOLEAN
87	PROVISION THROUGH COMMUNICATION DRIVEN RESET OF MD IS PROVIDED (YES/NO)	BOOLEAN
88	PROVISION TO RESET MD THROUGH LOCAL PUSH BUTTON IS PROVIDED (YES/NO)	BOOLEAN
89	PROVISION FOR AUTO RESET OF MD AT CERTAIN PREDEFINED PERIOD IS PROVIDED (YES/NO)	BOOLEAN
90	ALL ANTI TAMPER FEATURES ARE INCORPORATED IN METER AS PER SPECIFICATION (YES/NO)	BOOLEAN

91	METER LOGS TAMPER EVENTS AS PER SPECIFICATION (YES/NO)	BOOLEAN
92	TAMPER NO. & TAMPER EVENT IS REGISTERED IN TAMPER EVENT REGISTER (YES/NO)	BOOLEAN
93	THE NO. OF TIMES THE TAMPERING HAS BEEN DONE IS ALSO REGISTERED IN THE METER (YES/NO)	BOOLEAN
94	METER KEEPS RECORD OF TAMPER EVENTS FOR MINIMUM 200 EVENTS ON FIFO BASIS (YES/NO)	BOOLEAN
95	SUPPLY INDICATION IN THE FORM OF LED / LCD DISPLY IS PROVIDED (YES/NO)	BOOLEAN
96	SUPPLY INDICATION IS VISIBLE FROM THE FRONT OF THE METER (YES/NO)	BOOLEAN
97	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) OF MINIMUM 6 DIGITS AND MINIMUM 8 MM HEIGHT AND WIDE VIEWING ANGLE IS PROVIDED (YES/NO)	BOOLEAN
98	SIZE OF DIGITS	TEXT
99	AUTO DISPLAY CYCLING PUSH BUTTON WITH PERSISTENCE TIME OF 10 SECONDS IS PROVIDED (YES/NO)	BOOLEAN
100	PUSH BUTTON FOR HIGH RESOLUTION DISPLAY / ALTERNATE MODE OF DISPLAY IS PROVIDED (YES/NO)	BOOLEAN
101	BACKLIT LIQUID CRYSTAL DISPLAY (LCD) IS SUITABLE FOR TEMPERATURE WITHSTAND OF 700C (YES/NO)	BOOLEAN
102	METER IS PROGRAMMED FOR (A) MD INTEGRATION PERIOD OF 15 MINUTES (YES/NO)	BOOLEAN
103	(A) AVERAGE POWER FACTOR WITH 2 DECIMAL DIGITS (YES/NO)	BOOLEAN
104	(A) AUTO RESET KVAMD AT 24.00 HRS. OF LAST DAY OF THE MONTH AS PER CLAUSE 10.00 (III) OF SPECIFICATION (YES/NO)	BOOLEAN
105	(A) ARRAY OF DATA TO BE RETAINED INSIDE THE METER MEMORY FOR THE LAST 32 DAYS FOR A CAPTURE PERIOD OF 15 MINUTES ON FIRST IN FIRST OUT BASIS (FIFO) (YES/NO)	BOOLEAN
106	SEQUENCE OF DISPLAY PARAMETERS IS AS PER SPECIFICATIONS (YES/NO)	BOOLEAN
107	METER RECORDS & DISPLAYS THE QUANTITES AS PER SPECIFICATION (YES/NO)	BOOLEAN
108	DISPLAY OTHER THAN SPECIFIED IS BLOCKED (YES/NO)	BOOLEAN
109	OTHER KVA MD VALUES ARE AVAILABLE IN RESET BACKUP DATA FOR 12 MONTHS.	BOOLEAN
110	METER DISPLAY RETURNS TO DEFAULT DISPLAY MODE IF 'PUSH BUTTON' IS NOT OPERATED FOR 15 SECONDS (YES/NO)	BOOLEAN
111	BILLING DATA IS AS PER SPECIFICATION	BOOLEAN
112	PROVISION FOR RECORDING HISTORY OF BILLING PARAMETERS FOR LAST 12 MONTHS (YES/NO)	BOOLEAN
113	PROVISION FOR LOAD SURVEY DATA FOR EVERY 15 MINUTES AND FOR PREVIOUS 32 DAYS FOR SPECIFIED PARAMETERS ON FIFO BASIS (YES/NO)	BOOLEAN
114	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	BOOLEAN
115	A DLMS COMPLIANT HHU AS PER ANNEX J OF IS: 15959 / 2011 IS PROVIDED (YES/NO)	BOOLEAN
116	PROVISION FOR AUTO POWER SAVE IS MADE ON HHU (YES/NO)	BOOLEAN
117	HHU HAS A MEMORY CAPACITY OF 512 MB SRAM (STATIC RAM) WITH BATTERY BACKUP & UPGRADEABLE AND BIOS / OS ON FLASH / EEPROM MEMORY OF 256 KB (RAM-512 MB, FLASH-2GB, SD CARD- 8GB WITH USB FACILITY (YES/NO)	BOOLEAN

118	HHU OFFERED IS FULLY TYPE TESTED AT APPROVED NABL LABORATORY FOR (a) TESTS OF MECHANICAL REQUIREMENT SUCH AS FREE FALL TEST, SHOCK TEST, VIBRATION TEST (YES/NO)	BOOLEAN
119	(a) TESTS OF CLIMATIC INFLUENCES SUCH AS TESTS OF PROTECTION AGAINST PENETRATION OF DUST AND WATER (IP 6X), DRY HEAT TEST, COLD TEST, DAMP HEAT CYCLIC TEST (YES/NO)	BOOLEAN
120	(a) TESTS FOR ELECTROMAGNETIC COMPATIBILITY (EMC) (YES/NO)	BOOLEAN
121	(a) TEST OF IMMUNITY TO ELECTROMAGNETIC HF FIELDS (YES/NO)	BOOLEAN
122	(a) RADIO INTERFERENCE MEASUREMENT (YES/NO)	BOOLEAN
123	TYPE TEST REPORT NOS. & DATE OF HHU (YES/NO)	BOOLEAN
124	BASE COMPUTER SOFTWARE IS "WINDOWS" BASED & USER FRIENDLY (YES/NO)	BOOLEAN
125	LICENSED COPIES OF BASE COMPUTER SOFTWARE ARE SUPPLIED FREE OF COST.	BOOLEAN
126	NO EDITING IN TRANSFERRED DATA IS POSSIBLE ON BASE COMPUTER AS WELL AS HHU BY ANY MEANS (YES/NO).	BOOLEAN
127	DOWNLOADING SOFTWARE IS SUBMITTED TO INSTALL ON OUR LAPTOP / PC FOR DIRECTLY DOWNLOADING DATA FROM METER WITHOUT THE USE OF HHU (YES/NO)	BOOLEAN
128	SOFTWARE PROVIDED ON LAPTOP/PC IS COMPATIBLE TO READ DATA FROM USB DRIVE (YES/NO)	BOOLEAN
129	CABLE WITH USB TERMINATION PROVIDED (YES/NO)	BOOLEAN
130	TOTAL TIME TAKEN FOR DOWNLOADING BILLING, TAMPER AND LOAD SURVEY DATA FOR 32 DAYS	TEXT
131	DOWNLOADING TIME OF ONLY BILLING DATA	TEXT
132	PERMANENT NATURE CONNECTION DIAGRAM OF METER IS SHOWN ON INSIDE PORTION OF THE TERMINAL COVER (YES/NO)	BOOLEAN
133	DISTINCTLY MARKED NAME PLATE WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS, CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL IS PROVIDED ON METER (YES/NO)	BOOLEAN
134	METER SERIAL NUMBER IS BAR CODED WITH SIZE OF NOT BE LESS THAN 35X5 MM ALONG WITH NUMERIC NUMBER (YES/NO)	BOOLEAN
135	CLEARLY VISIBLE, EFFECTIVELY SECURED AGAINST REMOVAL AND INDELIBLY AND DISTINCTLY MARKED WITH ALL ESSENTIAL PARTICULARS AS PER RELEVANT STANDARDS NAME PLATE IS PROVIDED ON METER (YES/NO)	BOOLEAN
136	METER STORES NAME PLATE DETAILS AS GIVEN IN THE TABLE 30 OF ANNEX F OF IS: 15959 / 2011 & ARE READABLE AS A PROFILE AS AND WHEN REQUIRED (YES/NO)	BOOLEAN
137	CATEGORY OF METER AS "CATEGORY C1 – HT (PT / CT) CONSUMER METER" IN 3 MM BOLD FONT IS MARKED ON NAME PLATE (YES/NO)	BOOLEAN
138	WHETHER METER IS TYPE TESTED (YES/NO)	BOOLEAN
139	TYPE TEST REPORT NOS. & DATE OF METER	TEXT
140	METER PROTOCOL REPORT NOS. & DATES	TEXT
141	ALL ACCEPTANCE & ROUTINE TESTS, AS PER IS: 14697 / 1999 AMENDED UPTO DATE & THIS SPECIFICATION ARE CARRIED OUT ON METER & METER BODY (YES/NO)	BOOLEAN
142	TRANSPORTATION TEST IS CARRIED OUT (YES/NO)	BOOLEAN
143	METER & HHU ARE GUARANTEED FOR A PERIOD OF 66 MONTHS FROM THE DATE OF SUPPLY OR 60 MONTHS FROM THE DATE OF COMMISSIONING, WHICHEVER IS EARLIER (YES/NO)	BOOLEAN

144	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	BOOLEAN
145	FURNISH PRINCIPLE OF OPERATION OF METER OUTLINING THE METHODS AND STAGES OF COMPUTATIONS OF VARIOUS PARAMETERS STARTING FROM INPUT VOLTAGE AND CURRENT SIGNALS INCLUDING SAMPLING RATE IF APPLICABLE	TEXT
146	IN HOUSE TESTING FACILITY IS AVAILABLE FOR (A) AC VOLTAGE TEST (YES/NO)	BOOLEAN
147	(b) INSULATION RESISTANCE TEST (YES/NO)	BOOLEAN
148	(b) ACCURACY REQUIREMENT (YES/NO)	BOOLEAN
149	(b) TEST ON LIMITS OF ERRORS (YES/NO)	BOOLEAN
150	(b) TEST ON METER CONSTANT (YES/NO)	BOOLEAN
151	(b) TEST OF STARTING CONDITION (YES/NO)	BOOLEAN
152	(b) TEST OF NO-LOAD CONDITION (YES/NO)	BOOLEAN
153	(b) REPEATABILITY OF ERROR TEST (YES/NO)	BOOLEAN
154	(b) TEST OF POWER CONSUMPTION (YES/NO)	BOOLEAN
155	(b) TRANSPORTATION TEST (YES/NO)	BOOLEAN
156	(b) TAMPER CONDITIONS AS PER MSEDCL SPECIFICATION (YES/NO)	BOOLEAN
157	(b) GLOW WIRE TEST (YES/NO)	BOOLEAN
158	(b) LONG DURATION TEST (YES/NO)	BOOLEAN
159	(b) FLAMABILITY TEST (YES/NO)	BOOLEAN
160	(b) MANUFACTURER HAVE DULY CALIBRATED RSS METER OF CLASS 0.01 ACCURACY	BOOLEAN
161	15 (FIFTEEN) NOS. OF SAMPLE METERS & 1 (ONE) HHU AS PER TECHNICAL SPECIFICATIONS ARE SUBMITTED ALONGWYH OFFER (YES/NO)	BOOLEAN
162	MANUFACTURING PROCESS, ASSEMBLY, TESTING & MANUFACTURING ACTIVITIES AS PER TECHNICAL SPECIFICATION (YES/NO)	BOOLEAN
163	AGEING TEST FOR 72 HOURS AT 550 C TEMPERATURE AND ATMOSPHERIC HUMIDITY UNDER REAL LIFE CONDITION AT FULL LOAD CURRENT TO ELIMINATE INFANT MORTALITY IS CARRIED OUT (YES/NO)	BOOLEAN
164	GUARANTEE TO REPLACE METERS / HHU FREE OF COST WHICH ARE FOUND DEFECTIVE / INOPERATIVE AT THE TIME OF INSTALLATION OR BECOME INOPERATIVE / DEFECTIVE DURING GUARANTEE PERIOD (YES/NO)	BOOLEAN
165	QUALITY ASSURANCE PLAN AS PER SPECIFICATIONS IS ENCLOSED (YES/NO)	BOOLEAN
166	COMPONENT SPECIFICATION AS PER SPECIFICATION (YES/NO)	BOOLEAN

Required Documents (To be uploaded online)				
Sr. No.	NAME	SECTION	ITEM	DESCRIPTION
1	Documentary evidence for QAP of Technical Specification i.e. Annexure-D	Technical Section	3P4WCT/PT 1A AMR HT TOD	Documentary evidence for QAP of Technical Specification i.e. Annexure-D
2	Annexure-E Consent for supplying the Material As Per MSEDCL Standard Technical Specifications	Technical Section	3P4WCT/PT 1A AMR HT TOD	Annexure-E Consent for supplying the Material As Per MSEDCL Standard Technical Specifications
3	Documentary evidence for QAP of Technical Specification i.e. Annexure-D	Technical Section	3P4wCT PT 5A AMR HT	Documentary evidence for QAP of Technical Specification i.e. Annexure-D
4	Annexure-E Consent for supplying the Material As Per MSEDCL Standard Technical Specifications	Technical Section	3P4wCT PT 5A AMR HT	Annexure-E Consent for supplying the Material As Per MSEDCL Standard Technical Specifications
5	Annexure-E Consent for supplying the Material As Per MSEDCL Standard Technical Specifications	Technical Section	3P4wCT PT 5A AMR HT	Annexure-E Consent for supplying the Material As Per MSEDCL Standard Technical Specifications
6	Certificate duly certified by C.E./C.A. that the person/entity does not have controlling stake in mo	Commercial Section		Certificate duly certified by C.E./C.A. that the person/entity does not have controlling stake in more than one entity applied for the Tender/Bid.
7	The bidder shall submit the declaration Annexure-I.	Commercial Section		The bidder shall submit the declaration Annexure-I.
8	The bidder shall submit the undertaking certifying that you have not approached any one for undue in	Commercial Section		The bidder shall submit the undertaking certifying that you have not approached any one for undue influence
9	Copy of latest turnover certificate for the product offered for last 3 years duly certified by Chart	Commercial Section		Copy of latest turnover certificate for the product offered for last 3 years duly certified by Chartered engineer/accountant
10	ISO & BIS Certificates	Commercial Section		ISO & BIS Certificates
11	Doc. evid. from NSIC/DIC of not crossed prescribed monetary limit/limit for invest. in plant & m/c f	Commercial Section		Doc. evid. from NSIC/DIC of not crossed prescribed monetary limit/limit for invest. in plant & m/c for mfg. entrp. resp. & are entitled for Tender fee/EMD exmpn(MSE cert /Notarized valid NSIC cert)

Sr. No.	NAME	SECTION	ITEM	DESCRIPTION
12	Annexure U-II Form of Authorized Nominee / Assignee to be submitted on the letter head of the foreig	Commercial Section		Annexure U-II Form of Authorized Nominee / Assignee to be submitted on the letter head of the foreign bidder / manufacturer
13	SCHEDULE-C: Quantity Offered at Column No. 7 of Annexure-'B' (Price Schedule)	Commercial Section		SCHEDULE-C: Quantity Offered at Column No. 7 of Annexure-'B' (Price Schedule)
14	Notarized power of attorney in favor of appointed agent/representative.	Commercial Section		Notarized power of attorney in favor of appointed agent/representative.
15	List of year wise, item wise orders executed and under execution duly certified by C.A.	Commercial Section		List of year wise, item wise orders executed and under execution duly certified by C.A.
16	Doc. Evid. in respect of classification of your unit as per Micro, Small and Medium Enterprises Deve	Commercial Section		Doc. Evid. in respect of classification of your unit as per Micro, Small and Medium Enterprises Development Act 2006.
17	Doc. Evidence as per Cl. 2 of Section I i.e. Q.R.	Commercial Section		Doc. Evidence as per Cl. 2 of Section I i.e. Q.R.
18	Undertaking U-I to be submitted by the parent company situated abroad in case of the participant bid	Commercial Section		Undertaking U-I to be submitted by the parent company situated abroad in case of the participant bidder who is an India based subsidiary on General Stamp Paper of Rs. 200