Bangladesh Power Development Board

Tender Document for

Supply of 55,000 Nos Single Phase Solid State Smart Prepayment Meter with BPLC Module for New Connection under Cumilla Zone

**(International)
Open Tendering Method**

(One Stage Two Envelope Method)

International Tender No.

Package No. GRF-24(FY: 2023-24)

Directorate of Purchase
WAPDA Building (9th floor),
Motijheel C/A, Dhaka-1000.
Fax: +880 2 7126151, Phone: +880-2223383081

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REJECTION CLAUSES

(Tender shall be rejected if the Tenderer in its Tender, does not comply but not limited to the following criteria)

1. Tenderer shall have to comply with Eligibility criteria [ITT 5], Litigation history [ITT 13], Experience criteria [ITT 14], Financial Criteria [ITT15.1];
2. Tender must be accompanied by Letter of Authorization to the Signatory to sign the Tender on behalf of the Tenderer [ITT 21.1(q); ITT 34.3];
3. Tender Submission Letter (Form PG4-1), Tenderer Information sheet Form PG4-2) shall be properly filled up by the Tenderer and valid trade license, TIN and VAT registration number must be submitted by the tenderer [ITT 21.1(a); ITT 21.1(b); ITT 22.1; ITT 21.1(k)]
4. The Price Schedule for Goods (Form PG4-3B) shall be properly filled up by the Tenderer [ITT23] Tenderers are not allowed to change/ modify the format of Price Schedule;
5. If Tenderer does not manufacture or produce the Goods it offers to supply shall submit the Manufacturer's Authorization Letter (ITT 26.1(b);Form PG4-5; Section-6: Schedule of Requirements);
6. Tender shall remain valid for the period specified in the TDS and Tender must be accompanied by a valid Tender Security after the date of Tender submission deadline [ITT 27.2, ITT 29.2, ITT 29.3], Form PG-4-6;
7. Tenderer shall submit Guaranteed Technical Particulars (GTP) in Section: 7 shall be properly filled up in Manufacturer Official Pad with submission of related supporting documents and seal &signed by both Manufacturer & Tenderer [ITT 21.1(q)16];
8. Tenderer shall submit Warranty Certificate (Form PG4-12) as stated in TDS [ITT 21.1(q)8];
9. Tenderer shall submit sample(s) as per TDS [ITT 35.9, 21.1(q), 20]; Technical Specification 7] sample (where applicable);
10. Tenderer shall have to submit Manufacturer's Supply Record and End User Certificate(s) as stated in TDS [ITT 21.1(q)17, ITT 21.1(q)18];
11. Tenderer shall have to submit Type Test Certificate & Report as per section 7 [ITT 21.1(q)19];

Section 1. Instructions to Tenderers

A.   General

1. Scope of Tender

1.1   The Purchaser named in the Tender Data Sheet (TDS) (hereinafter referred to as the "Purchaser") wishes to issues these Tender Documents for the supply of Goods, and Related Services incidental thereto, as specified in the TDS and as detailed in Section 6: Schedule of Requirements.

(a)

1.2   The name of the Tender and the number and identification of its constituent lot(s) are stated in the TDS.

(b)

1.3   The successful Tenderer will be required to complete the delivery of the goods and related services (when applicable) as specified in the GCC Clause **18**.

2. Interpretation

2.1   Throughout this Tender Document

(a)   the term "in writing" means communication written by hand or machine duly signed and includes properly authenticated messages by facsimile or electronic mail;

(b)   if the context so requires, singular means plural and vice versa; and

(c)   "day" means calendar days unless otherwise specified as working days;

(d)   "Person" means and includes an individual, body of individuals, sole proprietorship, partnership, company, association or cooperative society that wishes to participate in Procurement proceedings;

(e)   "Tenderer" means a Person who submits a Tender;

(f)   "Tender Document ", means the Document provided by a Purchaser to a Tenderer as a basis for preparation of its Tender;

(g)   "Tender ", depending on the context, means a Tender submitted by a Tenderer for delivery of Goods and Related Services to a Purchaser in response to an Invitation for Tender ;

3. Source of Funds

3.1   The Purchaser has been allocated public funds from the source as indicated in the TDS and intends to apply a portion of the funds to eligible payments under the contract for which this Tender Document is issued.

3.2   For the purpose of this provision, "public funds" means any funds allocated to a Purchaser under Government budget, or loan, grants and credits placed at the disposal of a Purchaser through the Government by the development partners or foreign states or organizations.

3.3   Payments by the development partner, if so indicated in the TDS, will be made only at the request of the Government and upon approval by the development partner in accordance with the applicable Loan/Credit/Grant Agreement, and will be subject in all respects to the terms and conditions of that Agreement.

4. Corrupt, Fraudulent, Collusive or Coercive Practices

4.1 The Government requires that Procuring Entities, as well as Tenderers shall observe the highest standard of ethics during implementation of procurement proceedings and the execution of Contracts under public funds.

4.2 The Government requires that Procuring Entities, as well as Tenderers and Suppliers shall, during the Procurement proceedings and the execution of Contracts under public funds, ensure-

(a) strict compliance with the provisions of Section 64 of the Public Procurement Act 2006 (Act 24 of 2006);

(b) abiding by the code of ethics as mentioned in the Rule127 of the Public Procurement Rules, 2008;

(c) that neither it's any officer nor any staff or any other agents or intermediaries working on its behalf engages in any practice as detailed in ITT Sub Clause 4.3.

4.3 For the purposes of ITT Sub-clause 4.2 the terms set forth as bellows:

(a) **corrupt practice** means offering, giving or promising to give, receiving, or soliciting, either directly or indirectly, to any officer or employee of a Purchaser or other public or private authority or individual, a gratuity in any form; employment or any other thing or service of value as an inducement with respect to an act or decision or method followed by a Purchaser in connection with a Procurement proceeding or contract execution;

(b) **fraudulent practice** means the misrepresentation or omission of facts in order to influence a decision to be taken in a Procurement proceeding or Contract execution;

(c) **collusive practice** means a scheme or arrangement between two (2) or more Persons, with or without the knowledge of the Purchaser, that is designed to arbitrarily reduce the number of Tenders submitted or fix Tender pricesat artificial, noncompetitive levels, thereby denying a Purchaser the benefits of competitive price arising from genuine and open competition; or

(d) **coercive practice** means harming or threatening to harm, directly or indirectly, Persons or their property to influence a decision to be taken in a Procurement proceeding or the execution of a Contract, and this will include creating obstructions in the normal submission process used for Tenders.

(e) **"obstructive practice"** (applicable in case of Development Partner) means deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and /or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation.

4.4 Should any corrupt, fraudulent, collusive or coercive practice of any kind come to the knowledge of the Purchaser, it will, in the first place, allow the Tenderer to provide an explanation and shall, take actions only when a satisfactory explanation is not received. Such exclusion

and the reasons thereof, shall be recorded in the record of the procurement proceedings and promptly communicated to the Tenderer concerned. Any communications between the Tenderer and the Purchaser related to matters of alleged fraud or corruption shall be in writing.

4.5   If corrupt, fraudulent, collusive or coercive practices of any kind determined by the Purchaser against any Tenderer alleged to have carried out such practices, the Purchaser shall -

   (a) exclude the concerned Tenderer from further participation in the particular Procurement proceeding; or

   (b) reject any recommendation for award that had been proposed for that concerned Tenderer or;

   (c) declare, at its discretion, the concerned Tenderer to be ineligible to participate in further Procurement proceedings, either indefinitely or for a specific period of time.

4.6   The Tenderer shall be aware of the provisions on corruption, fraudulence, collusion and coercion in Section 64 of the Public Procurement Act, 2006 and Rule 127 of the Public Procurement Rules, 2008 and others as stated in GCC Clause **3**.

5. Eligible Tenderers

5.1   This Invitation for Tenders is open to eligible Tenderers from all countries, except for any specified in the TDS. A Tenderer will be eligible if it is a citizen, or is constituted, registered and operates in conformity with the provisions of the laws of that country.

5.2   A Tenderer may be a physical or juridical individual or body of individuals, or company, association invited to take part in public procurement or seeking to be so invited or submitting a Tender in response to an Invitation for Tenders.

5.3   Government-owned enterprises in Bangladesh shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under commercial law, and (iii) are not a dependent agency of the Purchaser.

5.4   Tenderers shall have the legal capacity to enter into the Contract. A Tenderer that is under a declaration of ineligibility by the Government of Bangladesh in accordance with applicable laws at the date of the deadline for Tender submission or thereafter shall be disqualified.

5.5   Tenderers and all parties constituting the Tenderer shall not have a conflict of interest pursuant to Rule 55 of the Public Procurement Rules, 2008.

5.6   Tenderers in its own name or its other names or also in the case of its Persons in different names, shall not be under a declaration of ineligibility for corrupt, fraudulent, collusive, coercivepractices as stated under ITT Sub Clause 4.3 (or obstructive practice, in case of Development Partner) in relation to the Development Partner's Regulation/Guidelines in projects financed by Development Partner.

5.7   Tenderers are not restrained or barred from participating in public Procurement on grounds of execution of defective supply in the past

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under any Contract.

5.8 Tenderers are not under a declaration of ineligibility by an international financing agency such as World Bank, Asian Development Bank or any other international agency.

5.9 Tenderers shall not be insolvent, be in receivership, be bankrupt, be in the process of bankruptcy, be not temporarily barred from undertaking business and it shall not be the subject of legal proceedings for any of the foregoing.

5.10 Tenderers shall have fulfilled its obligations to pay taxes and social security contributions under the provisions of laws and regulations of the country of its origin.In the case of foreign Tenderers, a certificate of competent authority in that country of which the Tenderer is citizen shall be provided.

5.11 Tenderers shall provide such evidence of their continued eligibility satisfactory to the Purchaser, as the Purchaser will reasonably request.

5.12 These requirements for eligibility will extend, as applicable, to Sub-contractor proposed by the Tenderer.

6. Eligible Goods and Related Services

6.1 All goods and related services to be supplied under the contract are eligible, unless their origin is from a country specified in the TDS.

6.2 For purposes of this Clause, the term "goods" includes commodities, raw material, machinery, equipment, and industrial plants; and "related services" includes services such as insurance, transportation, installation, and commissioning, training, and initial maintenance.

6.3 For purposes of this clause, "origin" means the country where the goods have been mined, grown, cultivated, produced, manufactured or processed; or through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.

6.4 The origin of goods and services is distinct from the nationality of the Tenderer. The nationality of the firm that produces, assembles, distributes, or sells the goods shall not determine their origin.

7. Site Visit

7.1 For goods contracts requiring installation/ commissioning/ networking or similar services at site, the Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine the Site and obtain all information that may be necessary for preparing the Tender and entering into a contract for the supply of goods and related services.

7.2 The Tenderer should ensure that the Purchaser is informed of the visit in adequate time to allow it to make appropriate arrangements.

7.3 The costs of visiting the Site shall be at the Tenderer's own expense.

B.   Tender Document

8. Tender Document: General

8.1   The Sections comprising the Tender Document are listed below and should be read in conjunction with any addendum issued under ITT Clause 11.

- Section 1   Instructions to Tenderers (ITT)
- Section 2   Tender Data Sheet (TDS)
- Section 3   General Conditions of Contract (GCC)
- Section 4   Particular Conditions of Contract (PCC)
- Section 5   Tender and Contract Forms
- Section 6   Schedule of Requirements
- Section 7   Technical Specifications
- Section 8   Drawings

8.2   The Purchaser shall reject any Tender if the Tender Document was not purchased directly from thePurchaser, or through its agent as stated in the TDS.

8.3   The Tenderer is expected to examine all instructions, forms, terms, and specifications in the Tender Document as well as addendum to Tender Documents.

9. Clarification of Tender Documents

9.1   A prospective Tenderer requiring any clarification of the Tender Document shall contact the Purchaser in writing at the Purchasers address indicated in the TDS before **two-third** of time allowed for preparation and submission of Tender elapses.

9.2   A Purchaser is not obliged to answer any clarification received after that date requested under ITT Sub-Clause 9.1.

9.3   The Purchaser shall respond in writing within five (5) working days of receipt of any such request for clarification received under ITT Sub-Clause 9.1

9.4   The Purchaser shall forward copies of its response to all those who have purchased the Tender Document, including a description of the enquiry but without identifying its source.

9.5   Should the Purchaser deem it necessary to amend the Tender Document as a result of a clarification, it shall do so following the procedure under ITT Clause 11.

10. Pre-Tender Meeting

10.1   To clarify issues and to answer questions on any matter arising in the Tender Document, the Purchaser may, if stated in the TDS, hold a Pre-Tender Meeting at the place, date and time as specified in the TDS. All Potential Tenderers are encouraged to attend the meeting, if it is held.

10.2   Minutes of the pre-Tender meeting, including the text of the questions raised and the responses given, together with any responses prepared after the meeting, will be transmitted within one week (7 days) after holding the meeting to all those who purchased the Tender Document and even those who did not attend the meeting.

10.3 Any amendment to the Tender Document listed in ITT Sub-Clause 8.1 that may become necessary as a result of the pre-Tender meeting shall be made by the Purchaser exclusively through the issue of an Addendum as stated under ITT Sub-Clause 11 and not through the minutes of the pre-Tender meeting.

10.4 Non-attendance at the pre-Tender meeting will not be a cause for disqualification of a Tenderer.

11. Addendum to Tender Documents

11.1 At any time prior to the deadline for submission of Tenders, the Purchaser on its own initiative or in response to a clarification request in writing from a Tenderer, having purchased the Tender Document or as a result of a Pre-Tender meeting, may revise the Tender Document by issuing an addendum pursuantto Rule 95 of the Public Procurement Rules, 2008.

11.2 The addendum issued under ITT Sub-Clause 11.1 shall become an integral part of the Tender Document and shall have a date and an issue number and shall be circulated by fax, mail or e-mail, to Tenderers who have purchased the Tender Documents within five (5) working days of issuance of such addendum, to enable Tenderers to take appropriate action.

11.3 The Tenderer shall acknowledge receipt of an addendum.

11.4 Tenderers who have purchased the Tender Documents but have not received any addendum issued under ITT Sub-clause 11.1 shall inform the Purchaser of the fact by fax, mail or e-mail before **two-third** of the time allowed for the submission of Tenders has elapsed.

11.5 Procuring Entities shall also ensure posting of relevant addenda with the reference number and date on their website.

11.6 To give a prospective Tenderer reasonable time in which to take an amendment into account in preparing its Tender, the Purchaser may, at its discretion, extend the deadline for the submission of Tenders, pursuant to Rule 95(6) of the Public Procurement Rule, 2008 and under ITT Clause 36.

11.7 If an addendum is issued when time remaining is less than one-thirdof the time allowed for the preparation of Tenders, a Purchaser shall extend the deadline by an appropriate number of days for the submission of Tenders, depending upon the nature of the Procurement requirement and the addendum. The minimum time for such extension shall not be less than seven (7) days.

C.   Qualification Criteria

12. General Criteria

12.1 The Purchaser requires the Tenderer to be qualified by meeting predefined, precise minimum requirements, which entails setting pass/fail criteria, which if not met by the Tenderer, will result in rejection of its Tender.

12.2 In addition to meeting the eligibility criteria, as stated in ITT Clause 5, the Tenderer must satisfy the other criteria stated in ITT Clauses 13 to 15 inclusive.

12.3 To qualify for a multiple number of lots in a package for which tenders are invited in the Invitation for Tenders, The Tenderer shall demonstrate having resources and experience sufficient to meet the aggregate of the qualifying criteria for the individual lot. The requirement of overall experience and specific experience under ITT Sub-Clause 14.1 (a) and 14.1 (b) shall not be separately applicable for individual lot.

13. Litigation History

13.1 The maximum number of arbitration awards against the Tenderer over a period shall be as specified in the TDS.

14. Experience Criteria

14.1 Tenderers shall have the following minimum level of supply experience to qualify for supplying the Goods and Related Services under the contract:

    (a) A minimum number of years of overall experience in the supply of goods and related services as specified in the TDS;

    (b) Specific experience of satisfactory completion of supply of Goods similar to the proposed goods in at least a number of contract(s) and, each with a minimum value, over the period, as specified in TDS; and

    (c) A minimum supply and/or production capacity of Goods as specified in the TDS.

15. Financial Criteria

15.1 Tenderers shall have the following minimum level of financial capacity of qualify for the supply of goods under the contract:

    (a) Availability of minimum liquid assets or working capital or credit facilities from a Bank, as specified in the TDS.

16. Appointment of Subcontractor

16.1 Tenderer, pursuant to Rule 53 of the PPR2008, is allowed to sub-contract a portion of the Supply.

16.2 The Tenderer shall specify in its Tender all portion of the Goods that will be Subcontracted, if any, including the entity(ies) to whom each portion will be subcontracted to, subject to the maximum allowable limit for subcontracting of Goods specified in the TDS.

16.3 All subcontracting arrangement must be disclosed at the time of Tendering, and subcontractors must be identified in the Tender submitted by Tenderer.

16.4 A Subcontractor may participate in more than one Tender, but only in that capacity.

16.5 Subcontractors must comply with the provision of ITT Clause 5. For this purpose contractor shall complete the Subcontractor's informationin Form PG4-2A for submission with tender.

16.6 If the Purchaser determines that a subcontractor is ineligible, the subcontracting of such portion of the Goods assigned to the ineligible subcontractor shall be disallowed.

D.   Tender Preparation

17. Only One Tender

17.1 If a Tender for Goods is invited on 'lot-by-lot' basis, each lot shall constitute a Tender. A Tenderer shall submit only one (1) Tender for each lot,   A Tenderer who submits or participates in more than one (1) Tender for each lot will cause all the Tenders with that Tenderer's participation to be rejected.

18. Cost of Tendering

18.1 Tenderers shall bear all costs associated with the preparation and submission of its Tender, and the Purchaser shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Tendering process.

19. Issuance and Sale of Tender Document

19.1 A Purchaser, pursuant to Rule 94 of the Public Procurement Rules,2008 shall make Tender Documents available immediately to the potential Tenderers, requesting and willing to purchase at the corresponding price if the advertisement has been published in the newspaper pursuant to Rule 90 of the Public Procurement Rules,2008.

19.2 Full contact details with mailing address, telephone and facsimile numbers and electronic mail address, as applicable, of those to whom Tender Documents have been issued shall be recorded with a reference number by the Purchaser or its agent.

19.3 There shall not be any pre-conditions whatsoever, for sale of Tender Document and the sale of such Document shall be permitted up to the day prior to the day of deadline for the submission of Tender.

20. Language of Tender

20.1 Tenders shall be written in English language. Supporting documents and printed literature furnished by the Tenderer may be in another language provided they are accompanied by an accurate translation of the relevant passages into the English language, in which case, for purposes of interpretation of the Tender, such translation shall govern.

20.2 Tenderers shall bear all costs of translation to the governing language and all risks of the accuracy of such translation.

21. Contents of Tender

21.1 The Tender prepared by the Tenderer shall comprise the following:

(a) Tender Submission Letter (Form PG4-1) as furnished in Section 5: Tender and Contract Forms;

(b) Tenderer information sheet (Form PG4-2) and Subcontractor Information (Form PG4-2A) as furnished in Section 5: Tender and Contract Forms;

(c) The completed Price Schedule for Goods and Related Services (Form PG4-3A, 3B, 3C and PG4-3D) asfurnished in Section 5: Tender and Contract Forms as stated under ITT Clauses 23 and 24;

(d) Tender Security as stated under ITT Clause 29,30 and 31;

(e) The completed Specifications Submission and Compliance Sheet (Form PG4-4) as furnished in Section 5: Tender and Contract Forms as stated under ITT clause 25.2;

(f) Alternatives, if permitted, as stated under with ITT Clause 22;

(g) Written confirmation authorising the signatory of the Tender to commit the Tenderer, as stated under ITT Sub-Clause 34.3;

(h) The completed eligibility declarations, to establish its eligibility as stated under ITT Clause 5, in the Tender Submission Sheet (Form PG4-1), as furnished in section 5: Tender and Contract Forms;

(i) An affidavit confirming the legal capacity stating that there are no existing orders of any judicial court that prevents either the Tenderer or employees of a Tenderer entering into or signing a Contract with the Purchaser as stated under ITT clause 5;

(j) An affidavit confirming that the Tenderer is not insolvent, in receivership or not bankrupt or not in the process of bankruptcy, not temporarily barred from undertaking their business for financial reasons and shall not be the subject of legal proceedings for any of the foregoing as stated under ITT Clause 5;

(k) A certificate issued by the competent authority stating that the Tenderer is a Tax payer having valid Tax identification Number (TIN) and VAT registration number or in lieu any other document acceptable to the Purchaser demonstrating that the Tenderer is a genuine Tax payer and has a VAT registration number as a proof of fulfillment of taxation obligations as stated under ITT Clause 5. In the case of foreign Tenderers, a certificate of competent authority in that country of which the Tenderer is citizen shall be provided ;

(l) Documentary evidence demonstrating that they are enrolled in the relevant professional or trade organizations registered in Bangladesh or in case of foreign tenderer in their country of origin or a certificate concerning their competency issued by a professional institution in accordance with the law of the country of their origin, as stated under ITT Clause 5;

(m) The country of origin declarations, to establish the eligibility of the Goods and Related Services as stated under ITT Clause 6,

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in the Price Schedule for Goods and Related Services (Form PG4-3B, 3C and PG4-3D) as, applicable, furnished in Section 5: Tender and Contract Forms;

(n)   Documentary evidence as stated under ITT Clauses 25, that the Goods and Related Services conform to the Tender Documents;

(o)   Documentary evidence as stated under ITT Clause 26 that the Tenderer's qualifications conform to the Tender Documents;

(p)   Documents establishing legal and financial autonomy and compliance with commercial law, as stated under ITT Sub-clause 5.3 in case of government owned entity; and

(q)   Any other document as specified in the TDS.

21.2   The Tenderer shall submit the Tender Submission Letter (Form PG4-1) as furnished in Section 5: Tender and Contract Forms. This form must be completed without any alterations to its format, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

21.3   The Tenderer shall submit the completed Price Schedule for Goods and Related Services (Form PG4-3A, 3B, 3C and PG4-3D), according to their origin as appropriate as furnished in section 5: Tender and Contract Forms.

22. Alternatives   22.1   Unless otherwise stated in the TDS, alternatives shall not be considered.

23. Tender Prices, Discounts   23.1   The prices and discounts quoted by the Tenderer in the Tender Submission Letter (Form PG4-1) and in the Price Schedule (Form PG4-3A, 3B, 3C and PG4-3D) shall conform to the requirements specified below.

23.2   All lots or items as listed in Section 6: Schedule of Requirements must be listed and priced separately on the Price Schedule following the Form PG4-3A, 3B, 3C and PG4-3D as applicable.

23.3   Tenders are being invited either for a single lot or for a number of lots on 'lot-by-lot' basis, as specified in the TDS.

23.4   Each lot shall constitute a Tender, If Tenders for Goods are invited on 'lot-by-lot' basis.

23.5   Tenders being invited for a single lot or for a number of lots on 'lot-by-lot' basis, price quoted shall correspond to 100% of the items specified for each lot and to 100% of the quantities specified for each item of that particular lot and shall correspond to 100% of the total offered lot value, unless otherwise stated in the TDS

23.6 A Lot Tender not offering minimum number of items of those being priced based on percentage of the total number of items, and, the corresponding minimum value based on percentage of the total lot value, as specified in the ITT Sub-Clause 23.5shall also be considered non-responsive.

23.7 Subject to ITT Sub-Clause 23.5, a Lot tender not offering a particular item which represents more than fifty percent (50%) of the estimated lot value identified by the Purchaser and specified in the TDS, even if it complies with the requirement of minimum number of items based on percentage of the total number of items as stated under ITT Sub Clause 23.5, shall be considered non-responsive.

23.8 The price to be quoted in Tender Submission Letter (Form PG4-1) shall be the total price of the Tender, excluding any discounts offered, only **in case of being awarded more than one lot**, by the Tenderer

23.9 a) Tenderers shall quote any unconditional discount in the Tender Submission Letter as stated under ITT Sub Clause 23.9 (b);

b) Tenderers wishing to offer any unconditional discount shall be equally applicable on all the items of price schedule after arithmetical correction.

23.10 Prices shall be quoted as specified in each Price Schedule (Form PG4-3A, 3B, 3C and PG4-3D) as applicable. The dis-aggregation of price components is required solely for the purpose of facilitating the comparison of tenders by the Purchaser. This shall not in any way limit the Purchaser's right to contract on any of the terms offered. In quoting prices, the Tenderer shall be free to use transportation through carriers registered in any eligible Countries. Similarly, the Tenderer may obtain insurance services from any eligible country. Prices shall be entered in the following manner:

23.11 For Goods, manufactured within Bangladesh, the prices in the Price schedule (Form PG4-3A) shall be entered separately in the following manner:

(a) the price of the Goods quoted EXW (ex works, ex factory, ex warehouse, ex showroom, or off-the-shelf, as applicable), including all customs duties and import vat and other taxes already paid or payable on the components and raw material used in the manufacture or assembly of the Goods;

(b) VAT payable on account of supplier, if the contract is awarded ; and

(c) the price for inland transportation, insurance, and other local costs for the delivery of the Goods to their final destination (Project Site) specified in the TDS.

23.12 For Goods, manufactured outside Bangladesh, to be imported, the prices in the Price schedule (Form PG4-3B) shall be entered separately in the following manner:

(a)   the price of the Goods, quoted CIP (named place of destination, in the Bangladesh)or CIF (named port of destination, in Bangladesh) as specified in the TDS;

(b)   VAT payable on account of supplier, if the contract is awarded; and

(c)   the price for inland transportation, insurance, and other local costs for the delivery of the Goods to their final destination (Project Site) specified in the TDS;

(d)   in addition to the CIP/CIF prices specified in 23.12(a) above, the price of the Goods to be imported may be quoted in other *INCOTERM* and shall be governed by the rules prescribed in the current edition of *INCOTERM* published by the International Chamber of Commerce, Paris, if so specified in the TDS;

23.13 For Goods, manufactured outside Bangladesh, already imported, the prices in the Price schedule (Form PG4-3C) shall be entered separately in the following manner:

(a)   the price of the Goods, including the original import value of the Goods; plus any mark-up ; plus any other related local cost, and custom duties, import VAT and other import taxes already paid on the Goods already imported.

(b)   the custom duties, import VAT and other import taxes already paid (need to be supported with documentary evidence) on the Goods already imported;

(c)   the price of the Goods, obtained as the difference between (a) and (b) above;

(d)   VAT payable on account of supplier, if the contract is awarded; and

(e)   the price for inland transportation, insurance, and other local costs for the delivery of the Goods to their final destination (Project Site) specified in the TDS.

[For previously imported Goods, the quoted price shall be distinguishable from the original import value of these Goods declared to customs and shall include any rebate or mark-up of the local agent or representative and all local costs except import duties and taxes, which have been paid. For clarity the tenderers are asked to quote the price including import duties, and additionally to provide the import duties and the price net of import duties which is the difference of those values.]

23.14 for Related Services, other than inland transportation and other services required to convey the Goods to their final destination, whenever such Related Services are specified in the Schedule of Requirements, the prices in the price schedule (Form PG4-3D) shall be entered in the following manner :

| | (a) | the price of each item comprising the Related Services (inclusive of any applicable taxes). |

24. Tender Currency

24.1 For expenditures that will be incurred in Bangladesh, the Tenderer shall quote the prices in Bangladeshi Taka (BDT).

24.2 Suppliers offering Goods manufactured or assembled in Bangladesh, are permitted to submit their Tender in a combination of local and foreign currencies.

24.3 For expenditures that will be incurred outside Bangladesh, the Tenderer may quote the prices in USD or GBP or EUR or JPY as specified in TDS.

25. Documents Establishing the Conformity of the Goods and Related services

25.1 To establish the conformity of the Goods and Related Services to the Tender Documents, the Tenderer shall furnish as part of its Tender the documentary evidence that the Goods and Related services conform to the technical specifications and standards in Section 7, Technical Specifications.

25.2 Documentary evidence of conformity of the Goods and services to the Tender Documents may be in the form of literature, drawings, and data, and shall consist of:

(a) a detailed description of the essential technical and performance characteristics of the Goods;

(b) if so required in TDS, tenderer shall also furnish a list giving full particulars, including available sources and current prices of spare parts, special tools, etc., necessary for the proper and continuing functioning of the Goods during the period specified in the TDS, following commencement of the use of the Goods by the Purchaser ; and

(c) an item-by-item commentary on the Purchaser's Technical Specifications demonstrating substantial responsiveness of the Goods and Related services to those specifications, or a statement of deviations and exceptions to the provisions of Section 7. Technical Specifications.

26. Documents Establishing Qualifications of the Tenderer

26.1 The documentary evidence of the Tenderer's qualifications to perform the contract if its Tender is accepted shall establish to the Purchaser's satisfaction:

(a) that the Tenderer meets each of the qualification criterion specified in Sub-Section C, Qualification Criteria of the ITT;

(b) that, if required in the TDS, a Tenderer that does not manufacture or produce the Goods it offers to supply shall submit the Manufacturer's Authorization Letter (Form PG4-5) furnished in Section 5: Tender and Contract Forms, to demonstrate that it has been duly authorized by the manufacturer or producer of the Goods to supply the Goods to Bangladesh.; and

(c) that, if required in the TDS, in case of a Tenderer not doing business within Bangladesh, the Tenderer is or will be (if awarded the contract) represented by an Agent in the countryequipped and able to carry out the Supplier's maintenance.

| | (d) | adequacy of minimum liquid assets i.e. working capital substantiated by Audit Reports or Bank Statement or credit line(s) substantiated in the format as specified (**Form PG4-6A**), without alteration as stated under ITT Sub Clause 15.1(a); |

27. Validity Period of Tender

27.1 Tender validities shall be determined on the basis of the complexity of the Tender and the time needed for its examination, evaluation, approval of the Tender and issuance of the Notification of Award pursuant to Rule 19 and 20 of the Public Procurement Rules,2008.

27.2 Tenders shall remain valid for the period specified in the TDS after the date of Tender submission deadline prescribed by the Purchaser, as stated under ITT Clause 36. A Tender valid for a period shorter than that specified will be rejected by the Purchaser as non- responsive.

28. Extension of Tender Validity and Tender Security

28.1 In justified exceptional circumstances, prior to the expiration of the Tender validity period, the Purchaser following Rule 21 of the Public Procurement Rules,2008 may solicit, **not later than ten (10) days** before the expiry date of the Tender validity, compulsorily all the Tenderers' consent to an extension of the period of validity of their Tenders.

28.2 The request for extension of Tender validity period shall state the new date of the validity of the Tender.

28.3 The request from the Purchaser and the responses from the Tenderers will be made in writing.

28.4 Tenderers consenting in writing to the request made by the Purchaser under ITT Sub-Clause 28.1 shall also correspondingly extend the validity of its Tender Security for twenty-eight (28) days beyond the new date for the expiry of Tender validity.

28.5 Tenderers consenting in writing to the request under ITT Sub-Clause 28.1 shall not be required or permitted to modify its Tender in any circumstances.

28.6 If the Tenderers are not consenting in writing to the request made by the Purchaser under ITT Sub-Clause 28.1, its Tender will not be considered for subsequent evaluation.

29. Tender Security

29.1 The Tender Security and its amount shall be determined sufficient to discourage the submission of frivolous and irresponsible tenders pursuant to Rule 22 of the Public Procurement Rule,2008 and shall be expressed as a rounded fixed amount and, shall not be stated as a precise percentage of the estimated total Contract value.

29.2 The Tenderer shall furnish as part of its Tender, in favour of the Purchaser or as otherwise directed on account of the Tenderer as specified in TDS.

29.3 Amount of the Tender security may be determined on the basis of different percentages for each lot, but the amount in fixed and currency as specified in TDS, if so indicated that the Tenders are invited on lot-by-lot basis under ITT Sub Clause 23.3

30. Form of

30.1 The Tender Security shall be in the form of an irrevocable bank

Tender security	guarantee issued by an internationally reputable bank and shall require to be endorsed by its any correspondent bank located in Bangladesh, to make it enforceable, in the format (Form PG4-6) furnished in Section 5: Tender and Contract Forms;

30.2 be payable promptly upon written demand by the Purchaser in the case of the conditions listed in ITT Clause 33 being invoked; and

30.3 remain valid for at least twenty eight (28) days beyond the expiry date of the Tender Validity in order to make a claim in due course against a Tenderer in the circumstances detailed under ITT Clause 33 and pursuant to Rule 25 of the Public Procurement Rules,2008.

31. Authenticity of Tender Security

31.1 The authenticity of the Tender security submitted by a Tenderer shall be examined and verified by the Purchaser in writing from the Bank issuing the security, prior to finalization of the Evaluation Report pursuant to Rule 24 of the Public Procurement Rule, 2008.

31.2 If a Tender Security is found to be not authentic, the Tender which it covers shall not be considered for subsequent evaluation and in such case the Purchaser shall proceed to take punitive measures against that Tenderer as stated under ITT Sub-Clause 4.6, pursuant to Rule 127 of the Public Procurement Rules, 2008 and in accordance with Section 64(5) of the Public Procurement Act, 2006.

31.3 Tender not accompanied by a valid Tender Security as stated under Sub-Clause 29, 30 and 31, shall be considered as non-responsive.

32. Return of Tender Security

32.1 No Tender security shall be returned by theTender Opening Committee (TOC) during and after the opening of the Tenders pursuant to Rule 26 of the Public Procurement Rules 2008.

32.2 No Tender security shall be returned to the Tenderers before contract signing, except to those who are found non-responsive.

32.3 Tender securities of the non-responsive Tenders shall be returned immediately after the Evaluation Report has been approved by the Purchaser.

32.4 Tender securities of the responsive Tenderers shall be returned only after the lowest evaluated responsive Tenderer has submitted the performance security and signed the contract , that being even before the expiration of the validity period specified in Clause 27.

32.5 Tender Securities of the Tenderers not consenting within the specified date in writing to the request made by the Purchaser under ITT Sub-Clause 28.1 in regard to extension of its Tender validity shall be discharged or returned forthwith.

33. Forfeiture of Tender Security

33.1 The Tender security pursuant to Rule 25 of the Public Procurement Rules,2008 may be forfeited if a Tenderer:

(a) withdraws its Tender after opening of Tenders but within the validity of the Tender as stated under ITT Clauses 27,and 28, pursuant to Rule 19 of the Public Procurement Rules 2008; or

(b) refuses to accept a Notification of Award as stated under ITT Sub-Clause 62.3, pursuant to Rule 102 of the Public Procurement

Rules 2008; or

(c)   fails to furnish performance security as stated under ITT Sub-Clause 63.2, pursuant to Rule 102 of the Public Procurement Rules 2008; or

(d)   refuses to sign the Contract as stated under ITT Sub-Clause 67.2 pursuant to Rule 102 of the Public Procurement Rules 2008; or

(e)   does not accept the correction of the Tender price following the correction of arithmetic errors as stated under ITT Clause 49, pursuant to Rule 98(11) of the Public Procurement Rules 2008

34. Format and Signing of Tender

34.1   The Tenderer shall prepare one (1) original of the documents comprising the Tender as described in ITTClause21 and clearly mark it "ORIGINAL". In addition, the Tenderer shall prepare the number of copies of the Tender, as specified in the TDS and clearly mark each of them "COPY". In the event of any discrepancy between the original and the copies, the original shall prevail.

34.2   Alternatives, if permitted under ITT Clause 22, shall be clearly marked "Alternative".

34.3   The original and each copy of the Tender shall be typed or written in indelible ink and shall be signed by a person duly authorised to sign on behalf of the Tenderer. This authorisation shall consist of a written authorisation and shall be attached to the Tender Submission Letter (Form PG4-1).

34.4   The name and position held by each person signing the authorisation must be typed or printed below the signature.

34.5   All pages of the original and of each copy of the Tender, except for un-amended printed literature, shall be numbered sequentially and signed or initialled by the person signing the Tender.

34.6   Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialled by the person(s) signing the Tender.

34.7   Person(s) signing the Tender shall describe his or her name, address, position.

E.   Tender Submission

35. Sealing, Marking and Submission of Tender

35.1   The Tenderer shall enclose the original in one (1) envelope and all the copies of the Tender, including the alternative , if permitted under ITT Clause 22 in another envelope, duly marking the envelopes as "ORIGINAL" "ALTERNATIVE" (if permitted) and "COPY." These sealed envelopes will then be enclosed and sealed in one (1) single outer envelope.

35.2 Tenders shall be properly marked by Tenderers in order not be confused with other types of correspondence which may also be hand-delivered or posted by mail or courier service. The inner and outer envelopes shall:

(a)   bear the name and address of the Tenderer ;

(b)   be addressed to the Purchaseras stated under ITT Sub-Clause 36.1;

(c)   bear the specific identification of this tendering process indicated in ITT Sub-Clause1.2 and any additional identification marks as specified in the TDS; and

(d)   bear a statement "DO NOT OPEN BEFORE…" the time   and date for Tender opening, as stated under ITT Sub- Clause 42.2

35.3 The Tenderer is solely and entirely responsible for pre-disclosure of Tender information if the envelope(s) are not properly sealed and marked.

35.4 Tenders shall be delivered by hand or by mail, including courier services to location as designated in the ITT Sub-Clause 36.1.

35.5 Tenders shall be submitted on the basis of this Tender Document issued by the Purchaser.

35.6 The Purchaser will, on request, provide the Tenderer with a receipt showing the date and time when it's Tender was received.

35.7 When so specified in the TDS, tenderers shall have the option of submitting their tenders electronically.

35.8 Tenderers submitting tenders electronically shall follow the electronic tender submission procedures specified in the TDS.

36. Deadline for Submission of tenders	36.1 Tenders shall be delivered to the Purchaser at the address specified in the TDS and no later than the date and time specified in the TDS.
	36.2 The Purchaser may, at its discretion on justifiably acceptable grounds duly recorded, extend the deadline for submission of Tender as stated under ITT Sub Clause 36.1, in which case all rights and obligations of the Purchaser and Tenderers previously subject to the deadline will thereafter be subject to the new deadline as extended.
37. Late tender	37.1 Any Tenderreceived by the Purchaser after the deadline for submission of Tenders as stated under ITTSub-Clause 36.1, shall be declared LATE, rejected, returned unopened to the Tenderer.
38. Modification, Substitution or Withdrawal of Tenders	38.1 A Tenderer may modify, substitute or withdraw its Tender after it has been submitted by sending a written noticeduly signed by the authorised signatory properly sealed, and shall include a copy of the authorisation (the power of attorney), confirmed by an affidavit duly authenticatedas stated underITT Clause 34.3, provided that such written notice including the affidavit is received by the Purchaser prior to the deadline for submission of Tenders as stated under ITT Sub-Clause 36.1.
39. Tender Modification	39.1 The Tenderer shall not be allowed to retrieve its original Tender, but shall be allowed to submit corresponding modification to its original Tender marked as "MODIFICATION".

40. Tender Substitution	40.1	The Tenderer shall not be allowed to retrieve its original Tender, but shall be allowed tosubmit another Tender marked as "SUBSTITUTION".
41. Withdrawal of Tender	41.1	The Tenderershall be allowed to withdraw its Tender by a Letter of Withdrawal marked as "WITHDRAWAL".

F. Tender Opening and Evaluation

42. Tender Opening

42.1 Tenders shall be opened pursuant to Rule 97following steps in Part D of Schedule IV of The Public Procurement Rule,2008.

42.2 Tenders shall be opened in public immediately after the deadline for submission of Tenders at the place, date and time as specified in the TDS but no later than **ONE HOUR** after expiry of the submission deadline. Tender opening shall not be delayed on the plea of absence of Tenderers or his or her representatives.

42.3 Any specific electronic Tender opening procedures required if electronic tendering is permitted under ITT Sub-Clause 35.7, shall be as specified in the TDS.

42.4 Persons not associated with the Tender may not be allowed to attend the public opening of Tenders.

42.5 The Tenderers' representatives shall be duly authorized by the Tenderer. Tenderers or their authorised representatives will be allowed to attend and witness the opening of Tenders, and will sign a register evidencing their attendance.

42.6 The authenticity of withdrawal or substitution of, or modifications to original Tender, if any made by a Tenderer in specified manner, shall be examined and verified by the Tender Opening Committee based on documents submitted under ITT Sub Clause 38.1.

42.7 Tenders will be opened in the following manner:

(a) firstly, envelopes marked "Withdrawal" shall be opened and "Withdrawal" notices read aloud and recorded, and the envelope with the corresponding Tender shall not be opened, but returned unopened to the Tenderer by the Purchaser at a later time immediately after preliminary examination by the Tender Evaluation Committee (TEC) as stated under ITT Sub-Clause 45.1. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and in such case the Tender shall be read aloud at the Tender opening ;

(b) secondly, the remaining Tenders will be sorted out and those marked "substitutes" or "modified" willbe linked with their corresponding "original"(O) Tender;

(c) Next, envelopes marked "Substitution"(S) shall be opened and read aloud and recorded, and exchanged with the corresponding Tender being substituted, and the substituted Tender shall not be opened, but returned unopened to the Tenderer by the Purchaser at a later time immediately after preliminary examination by the Tender Evaluation Committee (TEC) as stated under ITT Sub-Clause 45.1 . No Tender substitution shall be permitted unless the

corresponding substitution notice contains a valid authorization to request the substitution and in such case the Tender shall be read aloud at the Tender opening.

(d) Next envelopes marked "Modification" (M) shall be opened and readaloud with the corresponding Tender and recorded. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and in such case the Tender shall be read aloud at the Tender opening.

(e) thirdly, if so specified in this Tender Document, the envelopes marked " Alternative "(A) shall be opened and read aloud with the corresponding Tender and recorded.

42.8 Ensuring that only the correct (M), (S), (A),(O) envelopes are opened, details of each Tender will be dealt with as follows:

(a) the Chairperson of the Tender Opening Committee will read aloud each Tender and record in the Tender Opening Sheet (TOS)
  (i) the name and address of the Tenderer;
  (ii) state if it is a withdrawn, modified, substituted , or original tender;
  (iii) the Tender price;
  (iv) the number of initialled corrections;
  (v) any discounts;
  (vi) any alternatives;
  (vii) the presence or absence of any requisite Tender Security; and
  (viii) such other details as the Purchaser, at its discretion, may consider appropriate.

(b) only discounts and alternative read aloud at the Tender opening willbe considered in evaluation;

(c) all pages of the original version of the Tender, except for un-amended printed literature, will be initialled by members of the Tender Opening Committee.

42.9 Upon completion of Tender opening, all members of the Tender Opening Committee and the Tenderers orTenderer's duly authorised representatives attending the Tender opening shall sign by name, address, designation and their national Identification Numbers the Tender Opening Sheet, copies of which shall be issued to the Head of the Purchaser or an officer authorised by him or her and also to the members of the Tender Opening Committee and any authorised Consultants and, to the Tenderers immediately.

42.10 The omission of a Tenderer's signature on the record shall not invalidate the contents and effect of the record under ITT Sub-Clause 42.8.

42.11 No Tender willbe rejected at the Tender opening stage except the LATE Tenders. .

42.12 A copy of the record shall be distributed to all Tenderers who submitted tenders in time, and posted online when electronic tendering is permitted.

43. Evaluation of Tenders

43.1 Purchaser's Tender Evaluation Committee (TEC) shall examine, evaluate and compare Tenders that are responsive to the mandatory requirements of Tender Documents in order to identify the successful Tenderer.

43.2 Tenders shall be examined and evaluated only on the basisof the criteria specified in the Tender Document.

44. Evaluation process

44.1 The TEC may consider a Tender as responsive in the Evaluation, only if it is submitted in compliance with the mandatory requirements set out in the Tender Document. The evaluation process should begin immediately after tender opening following four steps:

(a) Preliminary Examination;

(b) Technical Examinations and Responsiveness;

(c) Financial evaluation and price comparison;

(d) Post-qualification of the lowest evaluated responsive Tenders.

45. Preliminary Examination

45.1 Compliance, adequacy and authenticity of the documentary evidences for meeting the qualification criterion specified in the corresponding section of the Tender document shall have to be preliminarily examined and verified.

45.2 The TEC shall firstly examine the Tenders to confirm that all documentation requested in ITT Clause 21 has been provided. Examination of the compliance, adequacy and authenticity of the documentary evidence may follow the order below:

(a) verification of the completeness of the eligibility declaration in the Tender Submission Letter (Form PG4-1), to determine the eligibility of the tenderer as stated under ITT Sub-Clause 21(h). Any alterations to its format, filling in all blank spaces with the information requested, failing which the tender may lead to rejection of the Tender;

(b) verification of that the Tenderer is enrolled in the relevant professional or trade organisations as stated under ITT Clause 21(l);

(c) verification of the eligibility in terms of legal capacity and fulfilment of taxation obligation by the tendererin accordance as stated under ITT Sub-Clause 21(i) and 21(k);

(d) verification of eligibility that the tenderer is not insolvent, in receivership, bankrupt, not in the process of bankruptcy, not temporarily barred as stated under ITT Sub-Clause 21(j);

(e) verification of eligibility of Tenderer's country of origin as stated under ITT Sub-Clause 21(b);

(f) verification of the written authorization confirming the signatory of the Tenderer to commit the Tender has been attached with Tender Submission Letter (Form PG4-1) as stated under ITT Sub-Clause 21(g);in order to check the authenticity of Tender and Tenderer itself ;

(g) verification of the Tender Security as stated under ITT Sub-Clause 21(d); and

(h) Verification of that the written notice for 'WITHDRAWL'and 'SUBSTITUTION of' or MODIFICATION to, the corresponding Tender is proper and authentic, if the tender is "WITHDRAWN",

"SUBSTITUTION" or "MODIFICATION", as stated under ITT Sub-Clause 38.1

45.3 The TEC shall confirm that the above documents and information have been provided in the Tender and the completeness of the documents and compliance of instructions given in corresponding ITT Clauses shall be verified, failing which the tender shall be considered as non-responsive.

46. Technical Examinations &Responsiveness

46.1 Only those Tenders surviving preliminary examination need to be examined in this phase.

46.2 Secondly, the TEC will examine the adequacy and authenticity of the documentary evidence which may follow the order below:

(a) verification of the completeness of the country of origin declaration in the Price Schedule for Goods and Related Services (Form PG4-3B, 3C and PG4-3D) as furnished in Section 5: Tender and Contract Forms to determine the eligibility of the Goods and Related Services as stated under ITT Sub Clause 21(m).

(b) verification and examination of the documentary evidence and completed Specification Submission Sheet (Form PG4-4) as furnished in Section 5: Tender and Contract Forms to establish the conformity of the Goods and Related Services to the Tender Documents as stated under ITT Sub Clause 21(e) and 21(n).

(c) verification and examinationof the documentary evidence that the Tenderer's qualifications conform to the Tender Documents and the Tenderer meets each of the qualification criterion specified in Sub-Section C, Qualification Criteria as stated under ITT Sub Clause 21(o).

(d) verification and examination of the documentary evidence that Tenderer has metall the requirements in regards to scope of Supplyas stated under Section 6, Schedule of Requirements, without any material deviation or reservation.

46.3 TEC may consider a Tender as responsive in the evaluation, only if comply with the mandatory requirementsas stated under Clause 46.2.

46.4 The TEC's determination of a Tender's responsiveness is to be based on the documentary evidence as requested in Clause 46.2 without recourse to extrinsic evidence.

46.5 Information contained in a Tender, that was not requested in the Tender Document shall not be considered in evaluation of the Tender.

46.6 If a Tender is not responsive to the mandatory requirements set out in the Tender Document it shall be rejected by the TEC and shall not subsequently be made responsive by the Tenderer by correction of the material deviation, reservation.

46.7 A material deviation or reservation is one-

(a) which affects in any substantial way the scope, quality, or performance of the Goods and Related Services and Tenderer's qualifications mentioned in the Tender Document.

(b) which limits in any substantial way, inconsistent with the Tender Documents, the Purchaser 's rights or the Tenderer's obligations under the Contract; or

(c) whose rectification would anyway affect unfairly the competitive position of other Tenderers presenting responsive Tenders.

46.8 During the evaluation of Tender, the following definitions apply:

(a) "Deviation" is a departure from the requirements specified in the Tender Document;

(b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Tender Document;

46.9 A TEC may regard a Tender as responsive, even if it contains-

(a) minor or insignificant deviations, which do not meaningfully alter or depart from the technical specifications, characteristics and commercial terms and conditions or other requirements set out in the Tender Document;

(b) errors or oversights, which if corrected, would not alter the key aspects of the Tender.

47. Clarification on Tender

47.1 The TEC may ask Tenderers for clarifications of their Tenders,including breakdowns of unit rates, in order to assist the examination and evaluation of the Tenders, provided that, Tender clarifications which may lead to a change in the substance of the Tender or in any of the key elements of the Tender as stated under ITT Sub-Clause 46.7, shall neither be sought nor permitted by the TEC.

47.2 Change in the tender price shall not be sought or permitted, except to confirm correction of arithmetical errors discovered by the Purchaser in the evaluation of the Tender, as sated under ITT Clause 49.

47.3 Any request for clarifications by the TEC shall not be directed towards making an apparently non-responsive Tender responsive and reciprocally the response from the concerned Tenderer shall not be articulated towards any addition, alteration or modification to its Tender.

47.4 If a Tenderer does not provide clarifications of its Tender by the date and time set in the TEC's written request for clarification, its Tender shall not be considered in the evaluation.

47.5 Requests for clarification shall be in writing and shall be signed only by the Chairperson of the TEC.

48. Restrictions on the Disclosure of Information Relating to the Procurement Process

48.1 Following the opening of Tenders until issuance of Notification of Award no Tenderer shall, unless requested to provide clarification to its Tender or unless necessary for submission of a complaint, communicate with the concerned Purchaser pursuant to Rule 31 of the Public Procurement Rule,2008.

48.2 Tenderers shall not seek to influence in anyway, the examination and evaluation of the Tenders.

48.3 Any effort by a Tenderer to influence a Purchaser in its decision concerning the evaluation of Tenders, Contract awards may result in the rejection of its Tender as well as further action in accordance with Section 64 (5) of the Public Procurement Act 2006.

48.4 All clarification requests shall remind Tenderers of the need for confidentiality and that any breach of confidentiality on the part of the

Tenderer may result in their Tender being disqualified.

48.5 Information relating to the examination, evaluation, comparison, and post qualification of the tender or contract award, shall not be disclosed to tenderers or any other persons not officially concerned with such process.

49. Correction of Arithmetical Errors

49.1 The TEC shall correct any arithmetic errors that are discovered during the examination of Tenders, and shall promptly notify the concerned Tenderer(s) of any such correction(s) pursuant to Rule 98(11) of the Public Procurement Rule, 2008.

49.2 Provided that the Tender is responsive, TEC shall correct arithmetical errors on the following basis:

(a) If there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the TEC there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted willgovern and the unit price will be corrected;

(b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.

49.3 Any Tenderer that does not accept the correction of the Tender amount following correction of arithmetic errors as determined by the application of ITT Sub-Clause 49.2 shall be considered as non-responsive.

50. Conversion to Single Currency

50.1 For evaluation and comparison purpose, TEC shall convert all Tender prices expressed in the amounts in various currencies into an amount in Bangladeshi BDT currency, using the **selling exchange rates** established by the Bangladesh Bank, on the date of **Tender opening**.

51. Domestic Preference

51.1 **Domestic preference** shall be a factor in tender evaluation, unless otherwise specified in the **TDS**

51.2 If **domestic preference shall be a tender-evaluation factor,** the Purchaser will grant a margin of fifteen percent (15%) domestic preference to Goods manufactured in Bangladesh during the evaluation of its Tender while comparing the same with those of other Tenderers under the classification set out in ITT Sub-Clause 51.3. The evaluation will be carried out in accordance with the provisions set out in ITT Clause 54.

51.3 Tenders will be classified in one of two groups, as follows:

(a) **Group A:** Tender offering goods manufactured in Bangladesh, for which:

(i) labour, raw materials, and components from within the Bangladesh account for more than thirty (30) percent of the EXW price; and

(ii) the production facility in which they will be manufactured or assembled has been engaged in manufacturing or assembling such goods at least since the date of tender submission.

(b) **Group B:** Tenders offering Goods manufactured outside

Bangladeshthat have been already imported or that will be imported.

51.4 To facilitate this classification by the Tenderer, the Tenderer shall complete whichever Form of the Price Schedule furnished in the Tender Document is appropriate.

51.5 Completion of an inappropriate Form of the Price Schedule by the Tenderer shall not result in rejection of its tender, but merely in the Purchaser's reclassification of the tenderer into its appropriate tender group.

52. Financial Evaluation

52.1 Thirdly the TEC, pursuant to Rule 98 of the Public Procurement Rules, 2008 shall evaluate each Tender that has been determined, up to this stage of the evaluation, to be responsive to the mandatory requirements in the Tender Document.

52.2 To evaluate a Tender in this stage , the Purchaser shall consider the following:

(a) Verification and examination of the Price Schedule for Goods and Related Services (Form PG4-3A, 3B, 3C and PG4-3D) as furnished by the Tenderer and checking the compliance with the instructions provided underITT Clause 23;

(b) Evaluation will be done for Items or lot by lot as stated under ITT Clause 23 and the Total Tender Price as quoted in accordance with Clause 23 ;

(c) Adjustment for correction of arithmetical errors as stated underITT Sub-Clause 49.2;

(d) Adjustment for price modification offered as stated under ITT Clause 38;

(e) Adjustment due to discount as stated under ITT Sub-Clauses 23.8 , 23.9 and 52.3;

(f) Adjustment due to the application of economic factors of evaluation as stated under ITT Sub-Clause 52.5 if any;

(g) Adjustment due to the assessment of the price of unpriced items as stated under ITT Clause 53 if any;

(h) Adjustment due to the application of a margin of preference (domestic preference), in accordance with ITT Clause 54 if applicable

52.3 If Tenders are invited for a single lot or for a number of lots as stated under ITT Sub-clauses 23.3, TEC shall evaluate only lots that that have included at least the percentage of items per lot as stated under ITT Sub-Clause 23.5 and 23.6. The TEC shall evaluate and compare the Tenders taking into account:

(a) Lowest evaluated tender for each lot ;

(b) The price discount/reduction per lot;

(c) Least cost combination for the Purchaser, considering discounts and the methodology for its application as stated under ITT Sub-clauses 23.8 and 23.9 offered by the Tenderer in its Tender.

52.4 Only those spare parts and tools which are specified as a item in the List of

Goods and Related Services in Section 6, Schedule of Requirement or adjustment as stated under ITT Sub-clause 52.5, shall be taken into account in the Tender evaluation. Supplier-recommended spare parts for a specified operating requirement as stated under ITT Sub-clause 25.2(b) shall not be considered in Tender evaluation.

52.5 The Purchaser's evaluation of a tender may require the consideration of other factors, in addition to the Tender Price quoted as stated under ITT Clause 23. The effect of the factors selected, if any, shall be expressed in monetary terms to facilitate comparison of tenders. The factors, methodologies and criteria to be used shall be as specified in TDS.The applicable economic factors, for the purposes of evaluation of Tenders shall be:

(a)   Adjustment for Deviations in the Delivery and Completion Schedule

(b)   Cost of major replacement components, mandatory spare parts, and service

52.6 Variations, deviations, and alternatives and other factors which are in excess of the requirements of the Tender Document or otherwise result in unsolicited benefits for the Purchaser will not be taken into account in Tender evaluation.

53. Assessing the Price of Unpriced Items

53.1 If it is so permittedunder ITT Clause 23 , any Tenderer offered only eighty percent (80%) or minimum percent of the items of a lot as stated under ITT Sub-Clause 23.5, the TEC shall calculate the total lot value by adding up the average prices offered by other responsive Tenderers for the missing items to the lot value to establish the winning lot Tender. If the Tenderer offered less than the specified, the Tender shall be evaluated as sated under ITT Clause 23.

53.2 If the winning lot is missing some items as stated under ITT Sub Clause 53.1, comprising less than twenty percent (20%), the Purchaser may procure the missing items from the Tenderer offering the least cost for those remaining items.

54. Evaluation of Domestic Preference

54.1 If the Tender document so specifies, the Tenderer will grant a margin preference to goods manufactured in Bangladesh as stated in ITT Caluse 51 for the purpose of Tender comparison, in accordance with the procedure outlined below:

54.2 The Purchaser will first review the tenders to confirm the appropriateness of, and to modify as necessary, the tenderer group classification to which Tenderers assigned their tenders in preparing their Tender Forms and Price Schedules.

54.3 All evaluated tenders in each group will then be compared to determine the lowest evaluated tender of each group. Such lowest evaluated tenders shall be compared with each other and if as a result of this comparison a tenderer from Group A and the Tenders offering Goods manufactured in Bangladesh is the lowest, it shall be selected for the award.

54.4 If, as a result of the preceding comparison, the lowest evaluated tender is from Group B,

(a)   all Group B tenders will then be further compared with the lowest evaluated tender from Group A, after adding to the evaluated tender price of goods offered in the tender for Group B, for the purpose of

further comparison only an amount equal to fifteen (15) percent of the CIF/CIP (named place of destination or named port of destination) tender price.

(b)   The lowest-evaluated tender determined from this last comparison shall be selected for the award.

55. Price Comparison

55.1   The TEC shall compare all responsive Tenders to determine the lowest-evaluated Tender, as stated under ITT Clause 54.

55.2   In the extremely unlikely event that there is a tie for the lowest evaluated price, the Tenderer with the superior past performance with the Purchaser shall be selected, whereby factors such as delivery period, quality of Goods delivered, complaints history and performance indicators could be taken into consideration.

55.3   In the event that there is a tie for the lowest price and none of the Tenderers has the record of past performance with the Purchaser, then the Tenderer shall be selected, subject to firm confirmation through the Post-qualification process described in ITT Clause 57, after consideration as to whether the quality of Goods that is considered more advantageous by the end-users.

55.4   The successful Tenderer as stated under ITT Sub Clauses 55.1, 55.2 and 55.3 shall not be selected through lottery under any circumstances.

56. Negotiation

56.1   No negotiations shall be held during the Tender evaluation or award with the lowest or any other Tenderer pursuant to Rule 99 of the Public Procurement Rules, 2008.

57. Post-qualification

57.1   After determining the lowest-evaluated responsive tender as sated under ITT Sub-Clause 55.1, the Purchaser's TEC pursuant to Rule 100 of the Public Procurement Rules, 2008, shall carry out the Post-Qualification of the Tenderer, using only the requirements specified in Sub-Section C, Qualification Criteria.

57.2   The TEC shall contact the references given by Tenderers about their previous Supply experiences to verify, if necessary, statements made by them in their Tender and to obtain the most up-to-date information concerning the Tenderers.

57.3   The TEC may visit the premises of the Tenderer as a part of the post-qualification process, if practical and appropriate, to verify information contained in its Tender.

57.4   The TEC shall determine to its satisfaction whether the Tenderer that is selected as having submitted the lowest evaluated responsive Tender is qualified to perform the Contract satisfactorily.

57.5   The objective of any visit under ITT Sub-Clause 57.3 shall be limited to a general and visual inspection of the Tenderer's facilities and its plant and equipment, and there shall be no discussion concerning the Tender or its evaluation with the Tenderer during such visit(s).

57.6 In the event that the Tenderer with lowest evaluated cost fails the post-qualification, the TEC shall make a similar determination for the Tenderer offering the next lowest evaluated cost and so on from the remaining responsive Tenders, provided that,

    (a) such action shall only be taken if the evaluated costs of the Tenders under consideration are acceptable to the Purchaser;

    (b) when the point is reached whereby the evaluated costs of the remaining responsive Tenders are significantly higher than that of the official estimate, or the market price, the Purchaser may take action pursuant to Rule 33 and may proceed for re-Tendering, using a revised Tender Document designed to achieve a more successful result.

58. Rejection of All Tenders

58.1 The Purchaser may, in the circumstances as stated under ITT Sub-Clause 58.2 and pursuant to Rule 33 of the Public Procurement Rules 2008, reject all Tenders following recommendations from the Evaluation Committee only after the approval of such recommendations by the Head of the Purchaser.

58.2 All Tenders can be rejected, if -

    (a) the price of the lowest evaluated Tender exceeds the official estimate, provided the estimate is realistic; or

    (b) there is evidence of lack of effective competition; such as non-participation by a number of potential Tenderers; or

    (c) the Tenderers are unable to propose completion of the delivery within the stipulated time in its offer, though the stipulated time is reasonable and realistic; or

    (d) all Tenders are non-responsive; or

    (e) evidence of professional misconduct, affecting seriously the Procurement process, is established pursuant to Rule 127 of the Public Procurement Rules, 2008.

58.3 Notwithstanding anything contained in ITT Sub-Clause 58.2 Tenders may not be rejected if the lowest evaluated price is in conformity with the market price.

58.4 A Purchaser maypursuant to Rule 35 of the Public Procurement Rules, 2008, on justifiable grounds, annul the Procurement proceedings prior to the deadline for the submission of Tenders.

58.5 All Tenders received by the Purchaser shall be returned unopened to the Tenderers in the event Procurement proceedings are annulled under ITT Sub-Clause 58.4.

59. Informing Reasons for Rejection

59.1 Notice of the rejection, pursuant to Rule 35 of the Public Procurement Rules, 2008, will be given promptly within seven (7) days of decision taken by the Purchaser to all Tenderers and, the Purchaser will, upon receipt of a written request, communicate to any Tenderer the reason(s) for its rejection but is not required to justify those reason(s).

G. Contract Award

60. Award Criteria

60.1 The Purchaser shall award the Contract to the Tenderer whose offer is responsive to the Tender Document and that has been determined to be the lowest evaluated Tender, provided further that the Tenderer is determined to

be Post-Qualified as stated under ITT Clause 57.

60.2 A Tenderer shall no be required, as a condition for award of contract, to undertake obligations not stipulated in the Tender Document, to change its price, or otherwise to modify its Tender.

61. Purchaser's Right to Vary Quantities

61.1 The Purchaser reserves the right at the time of Contract Award to increase or decrease the quantity, per item, of Goods and Related Services originally specified in Section 6: Schedule of Requirements, provided this does not exceed the percentages indicated in the TDS, and without any change in the unit prices or other terms and conditions of the Tender and the Tender Document.

62. Notification of Award

62.1 Prior to the expiry of the Tender validity period and within seven (7) working days of receipt of the approval of the award by the Approving Authority, the Purchaser pursuant to Rule 102 of the Public procurement Rules, 2008, shall issue the Notification of Award (NOA) to the successful Tenderer

i)

62.2 The Notification of Award, attaching the contract as per the sample (Form PG4-7) to be signed, shall state:

   (a)   the acceptance of the Tender by the Purchaser;

   (b)   the price at which the contract is awarded;

   (c)   the amount of the Performance Security and its format;

   (d)   the date and time within which the Performance Security shall be submitted; and

   (e)   the date and time within which the contract shall be signed.

62.3 The Notification of Award shall be accepted in writing by the successful Tenderer within seven (7) working days from the date of issuance of NOA.

62.4 Until a formal contract is signed, the Notification of Award shall constitute a Contract, which shall become binding upon the furnishing of a Performance Security and the signing of the Contract by both parties.

62.5 The Notification of Award establishes a Contract between the Purchaser and the successful Tenderer and the existence of a Contract is confirmed through the signature of the Contract Document that includes all agreements between the Purchaser and the successful Tenderer.

63. Performance Security

63.1 The Performance Security shall be determined sufficient to protect the performance of the Contract pursuant to Rule 27 of the Public Procurement Rules, 2008.

63.2 Performance Security shall be furnished by the successful Tenderer in the amount specified in the TDS and **denominated in the currencies** in which the Contract Price is payablepursuant to Rule 102 (8) of the Public Procurement Rules, 2008.

63.3 The proceeds of the Performance Security shall be payable to the Purchaser unconditionally upon first written demand as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

64. Form and Time Limit for furnishing of Performance security	64.1 The Performance Security shall be in the form of irrevocable Bank Guarantee in the format (Form PG4-9) as stated under ITT Clause 63, **shall be issued by an internationally reputable bank and it shall have correspondent bank located in Bangladesh, to make it enforceable**pursuant to Rule 27(4) of the Public Procurement Rules, 2008.**.**
	64.2 Within twenty-eight (28) days from issue of the Notification of Award, the successful Tenderer shall furnish the Performance Securityfor the due performance of the Contract in the amount specified under ITT Sub Clause 63.2.
65. Validity of Performance Security	65.1 The Performance Security shall be required to be valid until a date twenty-eight (28) days beyond the date of completion of the Supplier's performance obligations under the Contract, including any warranty obligations.
	65.2 If under any circumstances date of completion of the Supplier's performance obligations under the Contract, including any warranty obligations is to be extended, the Performance Security shall correspondingly be extended for the extended period.
66. Authenticity of performance Security	66.1 The Purchaser shall verify the authenticity of the Performance Security submitted by the successful Tenderer by sending a written request to the branch of the bank issuing irrevocable Bank Guaranteein specified format.
	66.2 If the Performance Security submitted under ITT Sub Clause 63.2 is not found to be authentic, the Purchaser shall proceed to take measures against the Tenderer in accordance with Section 64 of the Act and pursuant to Rule 127 of the Public Procurement Rules,2008.
67. Contract Signing	67.1 At the same time as the Purchaser issues the Notification of Award, the Purchaser shall send the draft Contract Agreement and all documents forming the Contract pursuant to Rule 102 of the Public Procurement Rule, 2008, to the successful Tenderer.
	67.2 Within twenty-eight (28) days of the issuance of Notification of Award, the successful Tenderer and the Purchaser shall sign the contract provided that the Performance Security submitted by the Tenderer is found to be genuine.
	67.3 If the successful Tenderer fails to provide the required Performance Security, as stated under ITT Clause 63 or to sign the Contract , as stated under ITT Sub-Clause 67.2, Purchaser shall proceed to award the Contract to the next lowest evaluated Tenderer, and so on, by order of ranking pursuant to Rule 102 of the Public Procurement Rules,2008.
68. Publication of Notification of Award of Contract	68.1 Notification of Awards for Contracts of BDT 10(ten) million and above shall be notified by the Purchaser to the Central Procurement Technical Unit within 7(seven) days of issuance of the NOA for publication in their website, and that notice shall be kept posted for not less than a month pursuant to Rule 37 of the Public Procurement Rules, 2008.
	68.2 Notification of Award for Contracts below BDT 10(ten) million, shall

be published by the Purchaser on its Notice Board and where applicable on the website of the Purchaser and that notice shall be kept posted for not less than a month pursuant to Rule 37 of the Public Procurement Rules, 2008..

69. Debriefing of Tenderers

69.1 Debriefing of Tenderers by Purchaser shall outline the relative status and weakness only of his or her Tender requesting to be informed of the grounds for not accepting the Tender submitted by him or her pursuant to Rule 37 of the Public Procurement Rule, 2008, without disclosing information about any other Tenderer.

69.2 In the case of debriefing confidentiality of the evaluation process shall be maintained.

70. Right to Complain

70.1 Any Tenderer has the right to complain if it has suffered or likely to suffer loss or damage due to a failure of a duty imposed on the Purchaser to fulfil its obligations in accordance with Section 29 of the Public Procurement Act 2006 and pursuant to Part 12 of Chapter Three of the Public Procurement Rules, 2008.

70.2 Circumstances in which a formal complaint may be lodged in sequence by a potential Tenderer against a Purchaserpursuant to Rule 56 of the Public Procurement Rules, 2008, and the complaints, if any, be also processed pursuant to Rule 57 of the Public Procurement Rules 2008 .

70.3 The potential Tenderer shall submit his or her complaint in writing within seven (7) calendar days of becoming aware of the circumstances giving rise to the complaint.

70.4 In the first instance, the potential Tenderer shall submit his or her complaint to the Purchaser who issued the Tender Document.

70.5 The place and address for the first stage in the submission of complaints to the Administrative Authority is provided in the TDS.

70.6 The Tenderer may appeal to a Review Panel only if the Tenderer has exhausted all his or her options of complaints to the administrative authority as stated under ITT Sub-Clause 70.2.

Section 2. Tender Data Sheet

Instructions for completing the Tender Data Sheet are provided, as needed, in the notes in italics and under lined mentioned for the relevant ITT clauses.	
ITT Clause	**Amendments of, and Supplements to, Clauses in the Instruction to Tenderers**
A. General	
ITT 1.1	The **Purchaser** is: Bangladesh Power Development Board (BPDB) **Representative:** Director, Directorate of Purchase, BPDB, WAPDA Building (9th floor), Motijheel C/A, Dhaka-1000. Tel: +880-2223383081 **Consignee:** General Manager, Commercial Operation, Biddyut Bhaban (13th Floor), BPDB, 1 Abdul Gani Road, Dhaka-1000.Tel:+880-2223381475 **Engineer:** Director, Directorate of Design & Inspection-II, BPDB, 9/B, Motijheel C/A,Dhaka-1000 Tel:+880-2223383613 **The Name and Identification number of the tender are**: Supply of 55,000 Nos Single Phase Solid State Smart Prepayment Meter with BPLC Module for New Connection under Cumilla Zone Package No.: GRF-24
ITT 1.2	The number, identification and name of lots comprising the Tender are: Single Lot, One Stage Two Envelope(The list of goods and related services are identified in Section 6: Schedule of Requirements).
ITT 3.1	The source of public fund is Cash Foreign Exchange under Revenue Budget of BPDB
ITT 3.3	The name of the Development Partner is: Not Applicable.
ITT 5.1	Tenderers from the following countries are not eligible: Israel and countries having no diplomatic relation with the Government of Bangladesh
ITT 6.1	Goods and Related Services from the following countries are not eligible: Israeland countries having no diplomatic relation with the Government of Bangladesh
B. Tender Document	
ITT 8.2	The following are the offices of the Purchaser for the purpose of providing the Tender Document: **Director** Directorate of Purchase, BPDB WAPDA Building (9th floor), Motijheel C/A Dhaka-1000 Tel No: +880-2223383081
ITT 9.1	For **clarification of Tender purposes** only, the Purchaser's address is: Attention: Director. Address: Directorate of Purchase, BPDB WAPDA Building (9th floor), Motijheel C/A Dhaka-1000, Bangladesh

	Tel No: +880-2223383081
ITT 10.1	A Pre- Tender meeting will not be held.

C. Qualification Criteria

ITT 13.1	The maximum Three (3) number of arbitrations against the Tenderer over a period of last five (5) years.
ITT 14.1(a)	The Tenderer shall have a minimum of 03(Three) years of overall experience in the supply of goods and related services.
ITT 14.1(b)	The minimum specific experience as Supplier in supply of similar Goods of at least 02(two) contract(s) successfully completed within the last 05(five) years, each with a value of at least USD 14,56,000.00 (USD Fourteen Lac Fifty Six Thousand) or BDT 16,02,00,000.00 (BDT Sixteen Crore Two Lac); *years counting backward from the date of publication of IFT in the newspaper.*
	In addition, performance of the completed contracts as mentioned in **Annexure: 4-1** shall be taken into consideration during evaluation.
	[For Tenders where the package contains more than one (1) lot, this qualification requirement shall be combined for each lot in the package.]
	Similar goods means: Electrical equipment/Materials.
ITT 14.1(c)	The minimum production capacity of similar goods must satisfy the assessment of Production Capacity as mentioned in Table- 3B of **Annexure: 4-3.**
	[For Tenders where the package contains more than one (1) lot, this qualification requirement shall be combined for each lot in the package.]
ITT 15.1(a)	The minimum amount of liquid assets i.e. working capital or credit line(s) of the Tenderer must satisfy the assessment of Financial Resources Availability as mentioned in Table- 4B of **Annexure: 4-4.**
	[For Tenders where the package contains more than one (1) lot, this qualification requirement shall be combined for each lot in the package.]
ITT 16.2	The maximum of percentage of Goods allowed to be subcontracted: Not Allowed.

D. Preparation of Tender

ITT 21.1(q)	The Tender shall be single stage two envelopes. Technical as well as financial proposal shall be submitted in two separate envelopes duly sealed and signed, which shall be in a single envelope duly addressed to the employer. The Technical envelope will be opened first. The Financial Proposal will be kept in safe custody of purchaser. Financial Proposal of only technically responsive bids will be opened at date and time to be notified later to the respective tenderer. The Financial Proposal of the technically non-responsive tenderer will be returned unopened to the respective tenderer. Documents to be submitted by the tenderer: I. The Tender Submission Letter (PG4-1A) [Ref.- ITT cl no 21.1(a) & 23.1] to be submitted with the technical proposal. II. The tenderer should quote price & discount (if any) in the Tender Submission Sheet (Form PG4-1B). As it is single stage two envelope system tender. This should be submitted within the Financial Proposal in separate envelope duly sealed and signed. III. The price schedule completed in accordance with ITT clauses-23 & 24 [Ref.- ITT Cl. no 21.1(c)] and to be submitted with the price proposal. The Tenderer shall submit with its Tender the following additional documents: 1. Sealed & Signed original Tender Document (which was issued by BPDB) by a

person duly authorized to sign on behalf of the tenderer. Copy of issued tender document will not be acceptable.

2. Registration/Certificate of Incorporation/Trade licence in its country of origin/ relevant documents as documentary evidence to satisfy experience criteria as stated in ITT 14.1(a).

3. End User certificate (s) as documentary evidence to satisfy experience criteria as stated in ITT 14.1(b).

4. Updated brochures of the supplier and/or manufacturer as documentary evidence to satisfy experience criteria as stated in ITT 14.1(c)

5. Audited Financial reports or bank statement or credit line(s)for 3 years substantiated by any schedule Bank as documentary evidence to satisfy financial criteria as stated in ITT 15.1(a).

6. Compliance certificate confirming to the terms and condition of the tender document.

7. Name of the Manufacturer, Certificate of the country of Origin and port of shipment (where applicable) of the offered equipment / items.

8. Warranty Certificate (Form PG4-12) from Tenderer as per GCC Clause-33

9. List of Goods and Delivery schedule as stated in Schedule of Requirements, Section: 6.

10. Manufacturer's Printed Catalogue describing specification and technical data of offered type equipment.

11. Outline and General Arrangement drawings of the offered type equipment.

12. Detail description of testing facilities at manufacturer's plant including calibration certificates of testing equipment.

13. Manufacturer's valid ISO 9001 Certificate.

14. Certification from the manufacturer confirming that his offered item is unused, new and in good condition and confirmed all features & accessories stated in Section 7: Technical Specification.

15. If Tenderer has any reservation, Tenderer has to mention it in Deviation list (Form PG4-11).

16. Guaranteed Technical Particulars (GTP) in Section 7 shall be properly filled up in manufacturer's official pad with submission of related supporting documents & signed by the Manufacturer & Tenderer.

17. At least 02 (two) nos. of Manufacturer's Supply Experience of offered type Single Phase smart prepayment meter with BPLC/PLC communication module supported by Copy of NOA/Contract Agreement/Certificate from Purchaser within the last 05 (five) years i.e. years counting backward from the date of publication of IFT in the newspaper. Manufacturer's Supply Experience shall be furnished in the following supply record format. (The Supply Experience covering at least 25% of the tendered quantity in a single contract will be considered only):

Sl. No.	Name, Address, Phone & Fax No. of the Purchaser	Contract No. & Date/ NOA	Contract Value	Description of supplied Meter (mentioning type & model)	Quantity	Date of Completion of Supply

18. At least 02 (two) nos. Manufacturer's Satisfactory Performance Certificates (supported by the Supply Record) from Electricity Utility as End User for the offered type Single Phase smart prepayment meter with BPLC/PLC communication module has been supplied within last 5(five) years i.e. years counting backward from the date of publication of IFT in the newspaper and has been in satisfactorily service for at least 02(two) years.

From these two certificates, at least one should be from outside of the manufacturer own country. The Satisfactory Performance Certificate (SPC) shall be in End User's official pad and shall contain end-user's full mailing address, domain e-mail address, website address and fax / telephone number for the convenience of authentication.

Note: Electricity Utility means an organization/company that engages in electricity transmission / distribution and sales of electricity in a regulated market.

19. The following Documents to be submitted with the tender otherwise bid will be rejected:

A. Complete Type Test report with ref. number as per relevant international standard in English along with test results of the offered pre-payment meter from anyone of the following Independent testing laboratory.
   i. KEMA, Holland.
   ii. UL International New Zealand/Parkside Laboratories, New Zealand.
   iii. South African Bureau of Standards (SABS).
   iv. MET Laboratories Inc., USA
   v. Office of the Gas and Electricity Market, UK /SGS, UK
   vi. European Measuring Instruments Directive (MID) recognized labs.
   vii. CESI, Italy.
   viii. Essef, France
   ix. CPRI, India

The Test Report includes the following tests with results (but not limited to):
   (a) Impulse voltage test
   (b) AC Voltage test
   (c) Accuracy test
        i) Test of variation of current
        ii) Test of meter constant
        iii) Test of starting condition
        iv) Test of no-load condition
        v) Test of ambient temperature influence
        vi) Test of influence quantities
   (d) Test of power consumption
   (e) Test of influence of supply voltage, short-time over currents, self-heating& heating.
        i. Electromagnetic compatibility (EMC) test
        ii. Dry heat test
        iii. Cold test
        iv. Damp heat accuracy, cyclic test
        v. Vibration test
        vi. Shock test
        vii. Spring hammer test
        viii. Test of protection against penetration of dust and water
        ix. Test of resistance to heat and fire

B. The manufacturer shall submit the test report of the offered meter on pre-

	payment mode as per IEC 62055-31 or SANS 1524-1 from any accredited Independent Testing Laboratory that includes the following test with results (but not limited to):
	- Functionality Test - Load switching Test C. Manufacturer/Tenderer shall submit the Accelerated reliability/ Life Cycle/Durability Test certificate of the offered meter. D. Bought out items: A detailed list of bought out items which are used in the manufacturing of the meter, shall be furnished indicating the name of firm/company from whom these items are procured. E. The Tenderers shall submit the DLMS/COSEM certificate of the offered meter. F. The Technical specification of the offered Communication Module shall be submitted along with the offer. G. The Tenderer must submit the IDIS certificate for manufacturer's Single Phase meter as an evidence of capacity for interoperability. 20. A) The qualified tenderer have to demonstrate/present the sample meter submitted with the tender to confirm the tender requirements. The tenderer will be notified the date of demonstration at least 15 (fifteen) days ahead of the demonstration. Demonstration has to be completed on the assigned date. B) The tenderer who will fail to perform this **presentation/ demonstration** on the sample meter or whose presentation/ demonstration will be unsatisfactory as per technical specification and tender requirements, will be considered technically non-responsive and as such their tender will be rejected and shall not be considered for further evaluation. 21. Tenderer shall have to submit the information of all completed similar contracts(if any)in govt. entities under power sector of Bangladesh within last 5 (five) years, i.e. years counting backward from the date of publication of IFT in the newspaper, with supporting document (end user's satisfactory performance certificate/ Acceptance Certificate) in the format attached as Annexure: 4-1. 22. Tenderer shall have to submit the information of all ongoing similar contract(s)(if any)in govt. entities under power sector of Bangladesh in the format attached as Annexure: 4-2 with supporting document (Acceptance of NOA/Contact agreement) along with the up to date Acceptance certificate / R&I certificate from end user.
ITT 22.1	Alternative Tenders will not be permitted.
ITT 23.3	Tender is invited for single lot.
ITT 23.5	Price quoted for each lot shall correspond at least to *100 %* of the items specified for each lot and correspond at least to *100%*of the total lot value.
ITT 23.7	Not Applicable
ITT 23.11(c) **ITT 23.12 (c)** **ITT 23.13 (e)**	Insurance will be paid by Bangladesh Power Development Board Final destination (project site) is *Central Store, BPDB, Tongi, Gazipur.*

ITT 23.12 (a)	Price of the Goods shall be quoted on CFR Port of Destination: Port of Destination: Chittagong/Mongla Sea Port or Dhaka Airport.
ITT 23.12 (d)	As specified in ITT 23.12(a)
ITT 24.3	Name of the foreign currency: US Dollar
ITT 25.2(b)	Spare parts are: N*ot required* Period of time the Goods are expected to be functioning (for the purpose of spare parts):
ITT 26.1(b)	Manufacturer's authorization is: Required. Authorization Letter from Manufacturer's Sales office (if located outside the manufacturing country) and Dealer/ Trading house will not be accepted if not supported by Manufacturer's letter. In this regard, Scanning Paper, E-mail copy, Faxed copy& Sealed signature will not be accepted. Manufacturer's signature in Authorization letter shall be handwritten by Pen i.e. signature through stamping /seal is not accepted. The Authorization letter shall mention domain E-mail address, Telephone/Fax, designation with detail address of the manufacturer representative duly signed in the manufacturer official pad.
ITT 26.1(C)	After-sales service is Required.
ITT 27.2	The Tender validity period shall be 150 (One hundred and Fifty) days.
ITT 29.2	The Tender Security shall furnish in favour of Director, Directorate of Purchase, Bangladesh Power Development Board.
ITT 29.3	The amount of the Tender Security shall be as per tender notice. *[note: Tender security shall be in Bangladesh Taka and in equivalent US Dollar]* Tender security must be furnished in the Technical Proposal, not in the Financial Proposal. The Tenderer if furnish the tender security in the Financial Proposal the tender will be rejected. **Tender Security must be endorsed by any scheduled bank of Bangladesh.**
ITT 34.1	In addition to the original of the Tender, 3(three) copies shall be submitted.
E. Submission of Tender	
ITT 35.1 **ITT 35.2(c)**	The International Tender shall be single stage two envelopes. Technical as well as financial proposal shall be submitted in two separate envelopes duly sealed and signed, which shall be in a single envelope duly addressed to the employer. The Technical envelope will be opened first. The Financial Proposal will be kept in safe custody of purchaser. Financial Proposal of only technically responsive bids will be opened at date and time to be notified later to the respective tenderer. The Financial Proposal of the technically non-responsive tenderer will be returned unopened to the respective tenderer. The tenderer shall enclose the original Technical Proposal and Financial Proposal in different envelope. The envelopes will be marked as 'Technical Proposal Original' and 'Financial Proposal Original'. Similarly copies of technical and financial proposal will be enclosed in two different envelopes and the envelopes will be marked 'Copy Technical Proposal' and 'Copy Financial Proposal'. Then original Technical Proposal envelope and copy of the Technical Proposal will be put into another envelope, as

	the envelope will be marked as Technical Proposal. Similarly, original Financial Proposal envelope and copy of the Financial Proposal will be put into another envelope, as the envelope will be marked as Financial Proposal. These two envelopes of Technical Proposal and Financial Proposal shall then been closed one single outer envelope. All the envelopes should be duly sealed and signed by the tenderer. Both Technical and Financial Proposals shall be submitted with permanent binding (Stitched/Sewn Binding). Each page shall contain sequential page number. Any Technical offer associated with Financial offer in the same Envelope will be rejected. The inner and outer envelopes shall bear the following additional identification marks: 1. Date of Submission 2. Seal & Signature of the Tenderer
ITT 35.7	Tenderer shall not have the option of submitting their tender electronically.
ITT 35.8	If Tenderer shall have the option of submitting their tender electronically: Not Applicable.
ITT 35.9 **(New Clause)**	**Submission of sample(s) and its Evaluation:** **(a)Submission of sample** : Tenderer shall submit 02 (Two) nos. of Single Phase Smart Pre-payment Meter(as per tender requirement) with BPLC communication modules samples of offered type and model along with their bid at time of bid submission, which will be non-returnable. Late submission of sample is not acceptable. If the Tenderer fails to submit the samples during bid submission, the bid shall be rejected and will not be considered for further evaluation. **(b) Demonstration of sample:** The tenderer will demonstrate the sample meters functionality and other requirements of as per Technical Specification & GTP of the Tender document. The respective preliminary qualified tenderer will be notified the date of demonstration at least 15 (fifteen) days ahead of the demonstration. Demonstration has to be completed on the assigned date. For this demonstration BPDB will not bear any expenses. This presentation/demonstration will be a part of the technical evaluation. The Tenderers, who will fail to perform this demonstration on sample meters or whose demonstration will be unsatisfactory as per technical specification (Section-7) of tender requirements with the existing unified system of BPDB, will be considered technically Non-responsive and as such their tender will be rejected and shall not be considered for further evaluation. In the demonstration BPDB will break the sample for checking the component of the meter. During Technical Examinations, the submitted sample(s) of the Responsive Tenderer's should comply with the technical requirements of the tender document and will be tested at CERS, BPDB as per latest version of relevant IEC/ BS or equivalent international standards as mentioned in the tender. If the submitted any sample failed in that test to conform the technical specification, the tender of the Tenderer will be rejected.
ITT 36.1	For **Tender submission purposes** ,the Purchaser's address is: Attention: Director, Directorate of Purchase, BPDB. Address: WAPDA Building (9th floor), Motijheel C/A, Dhaka-1000 Phone :+ 880-2223383081

	The deadline for submission of Tenders is: as specified in tender notice or amendment of submission time (if any).

F.   Opening and Evaluation of Tenders

ITT 42.2 **ITT 42.8-a(iii)**	a) The Tender opening shall take place at: The Office of the Director, Directorate of Purchase, BPDB, Address: WAPDA Building (9th floor), Motijheel C/A,Dhaka-1000 Time & Date: On Time & Date as specified in tender notice or amendment of opening time (if any) The Technical envelope will be opened first. The Financial Proposal will bekept in safe custody of purchaser. Financial Proposal of only technically responsive bids will be opened at date and time to be notified later to the respective tenderer. The Financial Proposal of the technically nonresponsive tenderer will be returned unopened to the respective tenderer.
ITT 42.3	If electronic tender submission is permitted as sated under ITT sub-clause 34.8, the specific tender opening procedures shall be: Not Applicable
ITT 51.1	Domestic Preference shall be a tender evaluation factor: **Not Applicable**
ITT 52.5	The applicable economic factors, for the purposes of evaluation of Tenders shall be: Not Applicable

G.   Award of Contract

ITT 61.1	The maximum percentage by which quantities per item may be increased is 20%. The maximum percentage by which quantities per item may be decreased is 20%. **Not Applicable**
ITT 63.2	The amount of Performance Security shall be 10% (ten percent) of the Contract Price. **Performance Security must be endorsed by any scheduled bank of Bangladesh.**
ITT 70.5	The name and address of the office where complaints to the Procuring Entity under Regulation 51 are to be submitted is: Director, Directorate of Purchase BPDB, WAPDA Building (9th floor), Motijheel C/A, Dhaka-1000, Bangladesh Phone +880-2223383081

Section 3. General Conditions of Contract

1. Definitions

1.1 The following words and expressions shall have the meaning hereby assigned to them. Boldface type is used to identify the defined term:

(a) **Completion Schedule** means the fulfilment of the Related Services by the Supplier in accordance with the terms and conditions set forth in the Contract;

(b) **ContractAgreement** means the Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein;

(c) **Contract Documents** means the documents listed in the Contract Agreement, including any amendments thereto;

(d) **Contract Price**means the price stated in the Notification of Award and thereafter as adjusted in accordance with the provisions of the Contract;;

(e) **Day**means calendar days unless otherwise specified as working days;

(f) **Delivery** means the transfer of ownership of the Goods from the Supplier to the Purchaser in accordance with the terms and conditions set forth in the Contract;

(g) **GCC** mean the General Conditions of Contract;

(h) **Goods**means raw materials, products and equipment and objects in solid, liquid or gaseous form, electricity, and related Services if the value of such Services does not exceed that of the Goods themselves;

(i) **Government** means the Government of the People's Republic of Bangladesh;

(j) **Procuring Entity/Purchaser** means a Entity having administrative and financial powers to undertake Procurement of Goods, Works or Services using public funds, as specified in the PCC;

(k) **Related Services**means Services linked to the supply of Goods contracts.;

(l) **PCC** means the Particular Conditions of Contract;

(m) **Subcontractor**means any natural person, private or government entity, or a combination of the above, to whom any part of the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier;

(n) **Supplier**means a Person under contract with a Purchaser for the supply of Goods and related Services under the Act;

(o) **Site** means the point(s) of delivery named in the PCC

(p) **Writing** means communication written by hand or machine duly signed and includes properly authenticated messages by facsimile or electronic mail.

	(q)	**Verified Report** means the report submitted by the Purchaser to the Head of the Purchaser setting forth its findings as to the existence of grounds or causes for termination and explicitly stating its recommendation for the issuance of a Notice to Terminate.

2. Contract Documents

2.1 Subject to the order of precedence set forth in the GCC Sub-Clause 5.1, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The Contract Agreement shall be read as a whole.

3. Corrupt, Fraudulent, Collusive or Coercive Practices

3.1 The Government requires that Purchaser, as well as Suppliers, shall observe the highest standard of ethics during the implementation of procurement proceedings and the execution of contracts under public funds.

3.2 The Government requires that Procuring Entities, as well as Suppliers shall, during the execution of Contracts under public funds, ensure-

(a) strict compliance with the provisions of Section 64 of the Public Procurement Act 2006 (Act 24 of 2006);

(b) abiding by the code of ethics as mentioned in the Rule127 of the Public Procurement Rules, 2008;

(c) that neither it nor any other member of its staff or any other agents or intermediaries working on its behalf engages in any practice as detailed in GCC Sub -Clause 3.3

3.3 For the purpose of GCC Sub-clause 3.2 the terms –

(a) **corrupt practice** means offering, giving or promising to give, receiving, or soliciting, either directly or indirectly, to any officer or employee of a Purchaser or other public or private authority or individual, a gratuity in any form; employment or any other thing or service of value as an inducement with respect to an act or decision or method followed by a Purchaser in connection with a Procurement proceeding or contract execution;

(b) **fraudulent practice** means the misrepresentation or omission of facts in order to influence a decision to be taken in a Procurement proceeding or Contract execution;

(c) **collusive practice** means a scheme or arrangement between two (2) or more Persons, with or without the knowledge of the Purchaser, that is designed to arbitrarily reduce the number of Tenders submitted or fix Tender pricesat artificial, noncompetitive levels, thereby denying a Purchaser the benefits of competitive price arising from genuine and open competition; or

(d) **coercive practice** means harming or threatening to harm, directly or indirectly, Persons or their property to influence a decision to be taken in a Procurement proceeding or the execution of a Contract, and this will include creating obstructions in the normal submission process used for Tenders.

3.4 Should any corrupt, fraudulent, collusive or coercive practice of any kind come to the knowledge of the Purchaser, it will, in the first place, allow the Supplier to provide an explanation and shall, take actions only when a satisfactory explanation is not received. Such exclusion and the reasons thereof, shall be recorded in the record of the procurement proceedings and promptly communicated to the Supplier concerned. Any communications between the Supplier and the Purchaser related to matters of alleged fraud or corruption shall be in writing.

3.5 If corrupt, fraudulent, collusive or coercive practices of any kind determined by the Purchaser against the Supplier alleged to have carried out such practices, the Purchasershall proceed under GCC Clause 42.4

3.6 The Supplier shall permit the Purchaser to inspect the Supplier's accounts and records and other documents relating to the submission of the Tender and Contract performance.

4. Interpretation   4.1 In interpreting the GCC, singular also means plural, male also means female or neuter, and the other way around. Headings in the GCC shall not be deemed part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract. Words have their normal meaning under the Englishlanguage unless specifically defined.

4.2 **Entire Agreement**

(a) The Contract constitutes the entire agreement between the Purchaser and the Supplier and supersedes all communications, negotiations and agreements (whether written or oral) of parties with respect thereto made prior to the date of Contract Agreement; except those stated under GCC Sub Clause 5.1(i) .

4.3 **Amendment**

(a) No amendment or other variation of the Contract shall be valid unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorised representative of each party thereto.

4.4 **Non-waiver**

(a) Subject to GCC Sub-Clause 4.4(b), no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, neither shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

(b) Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, dated, and signed by an authorised representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

4.5 **Severability**

(a) If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

5. Documents Forming the Contract in order of precedence

5.1 The following documents forming the Contract shall be in the following order of precedence, namely :

(a) the signed Contract Agreement;

(b) the Notification of Award;

(c) The Tender and the appendices to the Tender;

(d) Particular Conditions of Contract;

(e) General Conditions of Contract;

(f) Technical Specifications;

(g) Drawings;

(h) Priced Schedule and schedule of requirements and ;

(i) Other Documentsincluding correspondences listed in the PCC forming part of the Contract.

6. Eligibility

6.1 The Supplier and its Subcontractors shall have the nationality of an eligible country. A Supplier or Subcontractor shall be deemed to have the nationality of a country if it is a citizen or constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country.

6.2 All Goods and Related Services to be supplied under the Contract shall have their origin in Eligible Countries.

6.3 For the purpose of the GCC Clause 6.2, origin means the country where the goods have been grown, mined, cultivated, produced, manufactured, or processed; or through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.

7. Governing Language

7.1 The Contract shall be written in English language. Correspondence and documents relating to the Contract exchanged by the Supplier and the Purchasershall be written in English .Supporting documents and printed literature that are part of the Contract may be in another language provided they are accompanied by an accurate translation of the relevant passages in English language, in which case, for purposes of interpretation of the Contract, this translation shall govern.

7.2 The Supplier shall bear all costs of translation to the governing language and all risks of the accuracy of such translation.

8. Governing Law

8.1 The Contract shall be governed by and interpreted in accordance with the laws of the People's Republic of Bangladesh.

9. No fees/Gratuities

9.1 No fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the Tender or the contract, shall be given or received in connection with the procurement process or in the contract execution.

10.	Use of Contract Documents & Information	10.1	The Supplier shall not, except for purposes of performing the obligations in this Contract, without the Purchaser's prior written consent, disclose this Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Purchaser. Any such disclosure shall be made in confidence and shall extend only as far as may be necessary for purposes of such performance.
		10.2	Any document, other than this Contract itself, enumerated in GCC Clause 10.1 shall remain the property of the Purchaser and shall be returned (all copies) to the Purchaser on completion of the Supplier's performance under this Contract if so required by the Purchaser.
11.	Communications & Notices	11.1	Communications between Parties (notice, request or consent required or permitted to be given or made by one party to the other) pursuant to the Contract shall be in writing to the addresses specified in the PCC.
		11.2	A notice shall be effective when delivered or on the notice's effective date, whichever is later.
		11.3	A Party may change its address for notice hereunder by giving the other Party notice of such change to the address.
12.	Trademark,Patent and Intellectual Property Rights	12.1	The Purchaser should not be liable for any infringement of intellectual property rights arising from use of the goods procured. In case there are third-party claims of such infringement of patent, trademark, or industrial design rights, the supplier must indemnify and hold the Purchaser free and harmless against such claims and shall not be in contravention of The **Trademark Act, 2009 and The Patents and Designs Act, 1911.**
13.	Copyright	13.1	The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.
14.	Assignment	14.1	The Supplier shall not assign his rights or obligations under the Contract, in whole or in part, except with the Purchaser's prior written consent.
15.	Sub contracting	15.1	Any subcontracting arrangements made during contract implementation and not disclosed at the time of the Tendering shall not be allowed.
		15.2	Subcontracting of any portion of the Goods shall not relieve the Tenderer from any liability or obligations that may arise from its performance.
		15.3	Supplier shall retain full responsibility for the contract and can not pass any contractual obligations to the subcontractor and under no circumstances assignment of the contract to the subcontractor be allowed.
		15.4	Subcontractors shall comply with the provisions of GCC Clause 3 and 6.

16. Supplier's Responsibilities

16.1 The Supplier shall supply all the Goods and Related Services specified in the Scope of Supply as stated under GCC Clause 18 and the Delivery and Completion schedule, as stated under GCC Clauses 23 and 24 in conformity with the provisions of the Contract Agreement.

17. Purchaser's Responsibilities

17.1 Whenever the performance of the obligations in this Contract requires that the Supplier obtain permits, approvals and other license from local public authorities, the Purchaser may, if so needed by the Supplier, make its best effort to assist the Supplier in complying with such requirements in a timely and expeditious manner. However, the supplier shall bear the costs of such permits and/or licenses. On the other hand, the Purchaser shall pay all costs involved in the performance of its responsibilities, in accordance with the contract.

17.2 The Purchaser shall pay the Supplier, in consideration of the provision of Goods and Related Services, the Contract Price under the provisions of the Contract at the times and manner prescribed in the Contract Agreement.

18. Scope of Supply

18.1 Subject to the PCC, the Goods and Related Services to be supplied shall be as specified in Section 6: Schedule of Requirements.

18.2 Unless otherwise stipulated in the Contract, the Scope of Supply shall include all such items not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Delivery and Completion of the Goods and Related Services as if such items were expressly mentioned in the Contract.

19. Amendment to Order

19.1 The Purchaser may make an amendment to Order for necessary adjustment within the general scope of the contract in any one or more of the following aspects in order to fully meet the requirement of the Contract:

    (a)   Drawing, design or specifications of the goods, provided that:

        i.   The goods to be furnished are to be specifically manufactured for the government in accordance therewith;

        ii.   The change is an improvement of the goods and advantageous to the Government;

        iii.   It is done at no extra cost; and

        iv.   It is not prejudicial to the losing Tenderers in the sense that such change/s could not have been foreseen during the conduct of the tendering and would have significantly affected the other tenderer's tender;

    (b)   The place of delivery;

    (c)   The place of performance of the services;

    (d)   Additional items needed and necessary for the protection of the goods procured, which were not included in the original contract.

19.2 Such amendment may or may not result to an increase or a decrease of the contract price, and/or an extension or reduction of the delivery period. However, the amendment should not have the result of changing the subject matter of the contract or the specifications of the goods or services, in any material aspect and to such an extent that, if introduced during the Tendering stage, may have had a significant effect on other Tenderer's tender, because this situation would actually require another tendering activity.

20. Instances When Amendment to Order May be Issued

20.1 The Purchaser may issue amendments order at any time during contract implementation, through a notice as stated under GCC Clause 11, provided that such adjustment is required to fully meet the requirements of the contract. Any of the following circumstances may serve as basis for such amendment/s:

(a) Emergency cases, fortuitous events or unforeseen contingencies arising duringcontract implementation, and such contingencies have an impact on theprocurement at hand, such as:

    i. Changes in the conditions affecting the contract, e.g., a change in the place of delivery;

    ii. Time is of the essence in the implementation of the contract, and any changesrequire immediate implementation; and

    iii. Additional requirements have been identified as necessary for the protectionof the goods procured, such as changes in the packaging of the goods, or

    additional items have become necessary to ensure that the goods aresufficiently protected from the elements;

(b) When the contract does not reflect the real intention of the parties due to mistake or accident, and the amendment is necessary to reflect the party's intention; and

(c) Other analogous circumstances that could affect the conditions of the procurement athand

21. Adjustments in Contract Price and/or Delivery Schedule in Amendment to Order

21.1 If an amendment to order increases or decreases the cost of ,or the time required for executing any part of the delivery under the original contract, an equitable adjustment in contract price and/or delivery schedule should be mutually agreed upon between parties concerned, and the contract should be modified as stated under GCC Clause 46

21.2 If the amendment to order consists of additional items, the price adjustment shall be based on the unit price in the original contract for items of goods similar to those in the original contract. If the contract does not contain any rate applicable to the additional items, then suitable prices shall be mutually agreed upon between the parties, based on prevailing market prices.

21.3 It is required, however, that any increase in contract price must not exceed ten percent (10%) of the original contract price.

22. Packing and Documents

22.1 The Supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract and in accordance with existing industry standards. The packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.

22.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract as stated under GCC Clause

22.1, including additional requirements, if any, specified in the PCC, and in any subsequent instructions ordered by the Purchaser.

22.3 The outer packaging must contain a "Packing List" which must reflect the actual contents of the package.

23. Delivery and Documents

23.1 Subject to GCC Sub-Clause 19, the Delivery of the Goods and completion of the Related Services shall be in accordance with the Delivery and Completion Schedule specified in the Section 6: Schedule of Requirements.

23.2 The details of shipping and other documents to be furnished by the Supplier shall be specified in the PCC, and shall be received by the Purchaser at least one week before arrival of the Goods and, if not received the Supplier shall be responsible for consequent expenses.

24. Acceptance

24.1 Acceptance by the Purchaser shall be completed not later than fourteen (14) days from receipt of the goods at final destination in the form of an **Acceptance Certificate**, unless any defects in the supply, any damage during transportation or any failure to meet the required performance criteria of the supply are identified and reported to the Supplier as stated under GCC Clause 31 and GCC Clause 32. In such cases the Acceptance Certificate will be issued only for those parts of the contract supplies which are accepted. The Acceptance Certificate for the remaining supplies will only be issued after the Supplier has remedied the defects and/or any non-conformity under GCC Clause 31 and GCC Clause 32.

24.2 The appropriate Technical Inspection and Acceptance Committee of the Purchaser must commence the inspection and acceptance process within two (2) days from delivery of the goods, and shall complete the same as soon as practicable.

25. Contract Price

25.1 The Contract Price shall be specified in the PCC.

25.2 During evaluation,tender has excluded and not taken into account:

(a) In the case of Goods manufactured in Bangladesh, VAT payable on account of Supplier, which will be payable on the goods if a contract is awarded to the Tenderer;

(b) in the case of Goods manufactured outside the Bangladesh, already imported or to be imported, customs duties, import VAT and other import taxes levied on the imported Good, VAT, which will be payable on the Goods if the contract is awarded to the Tenderer.

25.3 The Contract price will include all the costs paid or payable as stated under GCC Clause 25.2.

25.4 Prices charged by the Supplier for the Goods delivered and the Related Services performed under the Contract shall not vary from the price as stated under GCC Sub-Clause 25.1, with the exception of any change in price resulting from a Change Order issued under GCC Clause 19.

26. Transportation	26.1	The Supplier is required under the Contract to transport the Goods to a specified place of destinationas specified in Section 6: Schedule of Requirements, defined as the Site, transport to such place of destination, including insurance, other incidental costs, and temporary storage, if any. These costs shall be included in the Contract Price.
	26.2	If not in accordance GCC Clause 26.1, responsibility for transportation of the Goods shall be as specified in the ***INCOTERM*** indicated in the Price Schedule or any other trade terms specify the responsibilities of the Purchaser and Supplier as specified in PCC.
27. Terms of Payment	27.1	The Contract Price, including any Advance Payments, if applicable, shall be paid in the manner as specified in the PCC.
	27.2	The Supplier's request for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and Related Services performed, and accompanied by the documents as stated under GCC Clause 23 and 24 and upon fulfilment of any other obligations stipulated in the Contract.
	27.3	Payments shall be made promptly by the Purchaser, but in no case later than the days indicated in the PCC after submission of an invoice or request for payment by the Supplier, and after the Purchaser has accepted it.
	27.4	The currencies in which payments shall be made to the Supplier under this Contract shall be those in which the tender price is expressed.
	27.5	In the event that the Purchaser fails to pay the Supplier any payment by its respective due date or within the period set forth in the PCC, the Purchaser shall pay to the Supplier interest on the amount of such delayed payment at the rate shown in the PCC, for the period of delay until payment has been made in full, whether before or after judgment or arbitrage award.
28. Insurance	28.1	The Goods supplied under this Contract shall be fully insured by the Supplier in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery. The Goods remain at the risk and title of the Supplier until their final acceptance by the Purchaser.
	28.2	If not in accordance GCC Clause 28.1, the insurance coverage shall be as specified in the ***INCOTERM*** indicated in the Price Schedule or any other insurance provisions as specified in PCC.
29. Taxes and Duties	29.1	For Goods Manufactured within Bangladesh, the Supplier shall be entirely responsible for all taxes, duties, VAT, license fees, and other such levies imposed or incurred until delivery of the contracted goods to the Purchaser.
	29.2	For Goods manufactured outside Bangladesh, the Supplier shall be entirely responsible for all taxes, duties and other such levies imposed outside Bangladesh.
	29.3	If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in Bangladesh, the Purchaser shall use its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.

30. Performance Security

30.1 The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

30.2 The Performance Security shall be discharged by the Purchaser and returned to the Supplier not later than Thirty (30) days following the date of Completion of the Supplier's performance obligations under the Contract and the issuance of certification to that effect by the Purchaser, including any warranty obligations as stated under GCC Clause 33,provided that there are noclaims field against the supplier.

31. Specifications and Standards

31.1 The Goods and Related Services supplied under this Contract shall conform to the technical specifications and standards mentioned in Section 7, Technical Specification and in Section 8, Drawings, if any.

31.2 If there is no applicable standard, the goods must conform to the authoritative standards appropriate to the good's country of origin. Such standards must be the latest issued by the concerned institution.

31.3 Subject to the GCC Clause 19,the Supplier shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designed by or on behalf of the Purchaser, by giving a notice of such disclaimer to the Purchaser.

31.4 Wherever references are made in the Contract to codes and standards in accordance with which it shall be executed, the edition or the revised version of such codes and standards shall be those specified in the Technical Specification. During Contract execution, any changes in any such codes and standards shall be applied only after approval by the Purchaser and shall be treated under GCC Clause 19.

32. Inspections and Tests

32.1 The Purchaser shall have the right to test the Goods to confirm their conformity to the Contract specifications. The PCC and Technical specifications shall specify what tests the Purchaser requires and where they are to be conducted. The supplier shall at its own expense and at no cost to the Purchaser, carry out all such tests of the Goods and related services as are specified in the Contract.

32.2 The Supplier shall provide the Purchaser with a report of the results of any such test.

32.3 The Purchaser may engage external agents for the purpose of conducting inspection or pre-shipment inspection of Goods, provided that the Purchaser shall bear all of its costs and expenses.

32.4 The Purchaser or its designated representative as specified shall be entitled to attend the tests and/or inspections under GCC Clause 32.1, provided that the Purchaser shall bear all of its own costs and expenses incurred in connection with such attendance.

32.5 Whenever the Supplier is ready to carry out any such test and inspection, it shall give a reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.

32.6 The Purchaser may require the Supplier to carry out any test and/or inspection not required by the Contract, but deemed necessary to verify that the characteristics and performance of the Goods comply with the technical specifications, codes and standards under the Contract, provided that the Supplier's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impede the progress of manufacturing and/or the Supplier's performance of its other obligations under the Contract, due allowance will be made in respect of the Delivery Dates and Completion Dates and the other obligations so affected.

32.7 The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice under GCC Sub-Clause 32.5.

32.8 The Supplier agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report as stated under GCC Sub-Clause 32.2, shall relieve the Supplier from any warranties or other obligations under the Contract.

33. Warranty

33.1 The Supplier warrants that all the Goods supplied under the Contract are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, except when the design and/or material required by the Purchaser provides otherwise under GCC Clause 19.

33.2 The Supplier further warrants that the all Goods supplied under this Contract shall have no defect, arising from design, materials, or workmanship or from any act or omission of the Supplier that may develop under normal use of the supplied Goods in the conditions prevailing in Bangladesh.

33.3 In order to assure that manufacturing defects shall be corrected by the Supplier, manufacturer, or distributor, as the case may be, a warranty shall be required from the Supplier for a minimum period of three (3) months in the case of supplies, and one (1) year in the case of equipment, or other such period as may be specified in the PCC, after the Goods, or any portion thereof as the case may be, have been delivered to and accepted in the form of an **Acceptance Certificate** as indicated in the GCC Clause 24.1 at the final destination indicated in the PCC

33.4 The warranty periods may vary among the various items and lots. The warranty for Goods delivered ahead will lapse earlier than the succeeding deliveries.

33.5 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.

33.6 Upon receipt of such notice, the Supplier shall, within the period specified in the PCC, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Purchaser.

33.7 If the Supplier, having been notified, fails to remedy the defect(s) within the period as stated underGCC Sub Clause 33.6, the Purchaser may proceed to call upon the Performance security without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract and under the applicable law.

33.8 Performance Security under GCC Clause no 30 shall only be released after the lapse of the warranty period, provided that the goods supplied are free from patent and latent defects and all the conditions imposed under the contract have been fully met.

    (a)   A patent defect, which is one that is apparent to the buyer on normal observation. Itis an apparent or obvious defect.

        i.   For example, a ball pen that does not write ispatently defective.

    (b)   A latent defect, which is one that is not apparent to the buyer by reasonable observation. A latent defect is "hidden" or one that is not immediately determinable.

        i.   For example, a ball pen that writes .75 kilometres instead of the expected 1.5kilometres, has a latent defect.

34. Delays in Delivery and Extensions of Time

34.1 The Supplier must deliver the Goods or perform the services procured within the period prescribed by the Purchaser, as specified in the Contract.

34.2 If at any time during performance of the Contract, the Supplier or its subcontractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services as stated under GCC Clause 23, the Supplier shall promptly notify the Purchaser in writing. It must state therein the cause/s and duration of the expected delay. The Purchaser shall decide whether and by how much to extend the time. In all cases, the request for extension should be submitted before the lapse of the original delivery date.

34.3 Within twenty-one (21) days of receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may grant time extensions, if based on justifiable grounds, without liquidated damages.

34.4 The Procuring may extend up to twenty percent (20%) of the original contract time, above 20% of the original contract time approval of Head of Purchaser (HOPE) shall be required, in which case the extension shall be ratified by the Parties by amendment of the Contract as stated under GCC Clause 46.

34.5 Except in the case of Force Majeure, as provided under GCC Clause 38, a delay by the Supplier in the performance of its Delivery and Completion obligations shall render the Supplier liable to the imposition of liquidated damages as stated under GCC Clause 35, unless an extension of time is agreed upon, under GCC Sub-Clause 34.3.

35. Liquidated Damages

35.1 Subject to GCC Clause 34 and 38, if the , if the Supplier fails to deliver any or all of the Goods by the Date(s) of deliveryand/or perform the Related Services within the period specified in the Contract as stated under GCC Clause 23, the Purchasershall, without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in the PCC of the Contract price of the delayed Goods or unperformed / Related Services for each week or part thereof of delay until actual

delivery or performance, up to a maximum deduction of the percentage specified in those PCC. Once the maximum is reached, the Purchaser may terminate the Contract as stated under GCC Clause 42.

36. Limitation of Liability

36.1 Except in cases of criminal negligence or wilful misconduct, and in the case of infringement of patent and intellectual property rights, if applicable, the Supplier shall not be liable to the Purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, the aggregate liability of the Supplier to the Purchasershall not exceed the total Contract Price, provided that this limitation shall not apply, to the cost of repairing or replacing defective equipment or, to any obligation of the Supplier to pay liquidated damages to the Purchaser.

37. Change in Laws and Regulations

37.1 Unless otherwise specified in the Contract, if after the Contract, any law, regulation, ordinance, order or bylaw having the force of law is enacted, promulgated, abrogated, or changed in Bangladesh (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/or the Contract Price, then such Delivery Date and/or Contract Price shall be correspondingly increased or decreased, to the extent that the Supplier has thereby been affected in the performance of any of its obligations under the Contract.

38. Definition of Force Majeure

38.1 In this Clause, "Force Majeure" means an exceptional event or circumstance:

(a) which is beyond a Party's control;

(b) which such Party could not reasonably have provided against before entering into the Contract;

(c) which, having arisen, such Party could not reasonably have avoided or overcome; and

(d) which is not substantially attributable to the other Party.

38.2 Force Majeure may include, but is not limited to, exceptional eventsor circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

(i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies;

(ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war;

(iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel;

(iv) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and

(v) natural catastrophes such as cyclone, hurricane, typhoon, tsunami, storm surge,floods, earthquake , landslides, fires, epidemics, quarantine restrictions, or volcanic activity;

(vi) freight embargoes;

(vii) acts of the Government in its sovereign capacity.

39. Notice of Force Majeure	39.1	If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.
	39.2	The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.
	39.3	Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.
40. Duty to Minimise Delay	40.1	Each Party shall at all times use all reasonable endeavours to minimise any delay in the performance of the Contract as a result of Force Majeure.
	40.2	A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.
41. Consequences of Force Majeure	41.1	The Supplier shall not be liable for forfeiture of its Performance Security, liquidated damages, or termination for default if and to the extent that it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
	41.2	The Purchaser may suspend the delivery or contract implementation, wholly or partly, by written order for a certain period of time, as it deems necessary due to force majeure as defined in the contract.
	41.3	Delivery made either upon the lifting or the expiration of the suspension order. However, if the Purchaser terminates the contract as stated under GCC clause 42, resumption of delivery cannot be done.
	41.4	Head of Purchaser determines the existence of a force majeure that will be basis of the issuance of suspension of order.
	41.5	Adjustments in the delivery or contract schedule and/or contract price, Including any need to modify contract under GCC Clause 46.
42. Termination for Default	42.1	The Purchaser shall terminate this Contract for default when any of the following conditions attends its implementation:
		(a) Outside of force majeure, the Supplier fails to deliver or perform any or all of the GOODS within the period(s) specified in the contract, or within any extension thereof granted by the Purchaser pursuant to a request made by the Supplier prior to the delay;
		(b) As a result of force majeure, the Supplier is unable to deliver or perform any or all of the GOODS, amounting to at least ten percent (10%) of the contract price, for a period of not less than

sixty (60) calendar days after receipt of the notice from the Purchaser stating that the circumstance of force majeure is deemed to have ceased; or

(c) The Supplier fails to perform any other obligation under the Contract;

(d) If the Supplier, in the judgment of the Purchaser has engaged in corrupt, fraudulent, collusive or coercive practices, as stated under GCC Clause 3, in competing for or in executing the Contract;

(e) When deductible amount due to liquidated damage reaches its maximum as stated under GCC Clause 35.

42.2 Termination of a contract for default is without prejudice to other remedies available to the Purchaser for breach of contract, such as payment of liquidated and other damages, if there are grounds for the latter.

42.3 In the event the Purchaser terminates the Contract in whole or in part, as stated under GCC Clause 42.1, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Related Services similar to those undelivered or not performed, and the Supplier shall be liable to the Purchaser for any additional costs for such similar Goods or Related Services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

42.4 In the event as stated under GCC Clause 42.1(d),the Purchaser shall,

(a) terminate the Supplier's employment under the Contract and cancel the contract,after giving 14 days' notice to the Supplier and the provisions of Clause 42 shall apply as if such expulsion had been made under Sub-Clause 42.1

(b) declare, at its discretion, the concerned Person to be ineligible to participate in further Procurement proceedings, either indefinitely or for a specific period of time.

43. Termination for insolvency

43.1 The Purchaser shall terminate this Contract if the Supplier is declared bankrupt or insolvent as determined with finality by a court of competent jurisdiction. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser and/or the Supplier.

44. Termination for Convenience

44.1 The Purchaser, by written notice sent to the supplier, may terminate this Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that the termination is for the Purchaser's convenience, the extent to which performance of the supplier under the contract is terminated, and the date upon which such termination becomes effective.

44.2 Any of the following circumstances may constitute sufficient grounds to terminate a contract for conveniences :

(a)   If Physical and economic conditions have significantly changed so as to render the contract no longer economically, financially or technically feasible, as determined by the Head of Purchaser;

(b)   The Head of Purchaser has determined the existences of conditions that make contract implementation impractical and/or unnecessary, such as, but not limited to , fortuitous event/s, change in laws and government policies;

(c)   Funding for the contract has been withheld or reduced;

(d)   Any circumstances analogous to the foregoing.

44.3 The GOODS that have been delivered and/or performed or are ready for delivery or performance within thirty (30) calendar days after the Supplier's receipt of Notice to Terminate shall be accepted by the Purchaser at the contract terms and prices. For GOODS not yet performed and/or ready for delivery, the Purchaser may elect:

(a)   to have any portion delivered and/or performed and paid at the contract terms and prices; and/or

(b)   to cancel the remainder and pay to the Supplier an agreed amount for partially completed and/or performed goods and for materials and parts previously procured by the Supplier.

45. Procedures for Termination of Contracts

45.1 The following provisions shall govern the procedures for termination of this Contract as stated under GCC Clauses 42,43 and 44:

(a)   Upon receipt of a written report of acts or causes which may constitute ground(s) for termination as aforementioned, or upon its own initiative, the Purchaser shall, within a period of seven (7) calendar days, verify the existence of such ground(s) and cause the execution of a Verified Report, with all relevant evidence attached;

(b)   Upon recommendation by the Purchaser, the Head of the Purchaser shall terminate this Contract only by a written notice to the Supplier conveying the termination of this Contract. The notice shall state:

i.   that this Contract is being terminated for any of the ground(s) afore-mentioned, and a statement of the acts that constitute the ground(s) constituting the same;

ii.   the extent of termination, whether in whole or in part;

iii.   an instruction to the Supplier to show cause as to why this Contract should not be terminated; and

iv.   special instructions of the Purchaser, if any.

(c)   The Notice to Terminate shall be accompanied by a copy of the Verified Report;

(d)   Within a period of seven (7) calendar days from receipt of the Notice of Termination, the Supplier shall submit to the Head of

the Purchaser a verified position paper stating why this Contract should not be terminated. If the Supplier fails to show cause after the lapse of the seven (7) day period, either by inaction or by default, the Head of the Purchaser shall issue an order terminating this Contract;

(e) The Purchaser may, at any time before receipt of the Supplier's verified position paper, withdraw the Notice to Terminate if it is determined that certain items or works subject of the notice had been completed, delivered, or performed before the Supplier's receipt of the notice;

(f) Within a non-extendible period of ten (10) calendar days from receipt of the verified position paper, the Head of the Purchaser shall decide whether or not to terminate this Contract. It shall serve a written notice to the Supplier of its decision and, unless otherwise provided, this Contract is deemed terminated from receipt of the Supplier of the notice of decision. The termination shall only be based on the ground(s) stated in the Notice to Terminate; and

(g) The Head of the Purchaser may create a Contract Termination Review Committee (CTRC) to assist him in the discharge of this function. All decisions recommended by the CTRC shall be subject to the approval of the Head of the Purchaser.

46. Contract Amendment

46.1 Subject to applicable laws, no variation in or modification of the terms of this Contract shall be made except by written amendment signed by the parties.

46.2 The Purchaser, in accordance with their Delegation of Financial Powers, as required, may amend the Contract to reflect the changes introduced to the Original terms and Conditions of the Contract.

47. Settlement of Disputes

47.1 **Amicable Settlement:**

(a) The Purchaser and the Supplier shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.

47.2 **Adjudication**

(a) If the Supplier /Purchaser believe that amicable settlement of dispute is not possible between the two parties, the dispute shall be referred to the Adjudicator within fourteen (14) days of first written correspondence on the matter of disagreement;

(b) The Adjudicator named in the PCC is jointly appointed by the parties. In case of disagreement between the parties, the Appointing Authority designated in the PCC shall appoint the Adjudicator within fourteen (14) days of receipt of a request from either party;

(c) The Adjudicator shall give its decision in writing to both parties within twenty-eight (28) days of a dispute being referred to it;

(d) The supplier shall make all payments (fees and reimbursable

expenses) to the Adjudicator, and the Purchaser shall reimburse half of these fees through the regular progress payments;

(e) Should the Adjudicator resign or die, or should the Purchaser and the Supplier agree that the Adjudicator is not functioning in accordance with the provisions of the Contract; a new Adjudicator will be jointly appointed by the Purchaser and the Supplier. In case of disagreement between the Purchaser and the Supplier the Adjudicator shall be designated by the Appointing Authority designated in the PCC at the request of either party, within fourteen (14) daysof receipt of a request from either party.

47.3 **Arbitration**

(a) If the Parties are unable to reach a settlement under GCC Clause 47.1(a) within twenty-eight (28) days of the first written correspondence on the matter of disagreement, then either Party may give notice to the other party of its intention to commence arbitration in accordance with GCC Sub-Clause 47.3(b);

(b) The arbitration shall be conducted in accordance with the rules of procedure specified in the PCC.

Section 4.   Particular Conditions of Contract

Instructions for completing the Particular Conditions of Contract are provided, as needed, in the notes in italics mentioned for the relevant GCC clauses.	

GCC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
GCC 1.1(j)	The Procuring Entity/Purchaser is Bangladesh Power Development Board (BPDB), **Representative:** Director, Directorate of Purchase, WAPDA Building (9th floor), Motijheel CA, Dhaka-1000. Phone +880-2223383081 **Consignee:** General Manager, Commercial Operation, BPDB, 13th Floor Bidyut Bhaban,1 Abdul Gani Road, Dhaka-1000. Phone: +880-2223381475 **Engineer:** Director, Directorate of Design & Inspection-II, 9/B,Motijheel C/A,Dhaka-1000 Tel +88029550404, Fax: +880-2223383613
GCC 1.1(o)	The site(s)/ point(s) of delivery is/are*: Central Store, BPDB,*Tongi, Gazipur.
GCC 5.1(i)	The following documents shall also be part of the Contract: Acceptance of NOA, Performance Security and All Correspondences between purchaser and Supplier prior to signing of the contract
GCC 11.1	For **notices**, the Purchaser's contact details shall be: Attention: Director, Directorate of Purchase, BPDB, Dhaka. Address: WAPDA Building (9th floor), Motijheel C/A, Dhaka-1000, Bangladesh Telephone: +880-2223383081
	For **notices**, the Supplier's contact details shall be: Attention: Address: Telephone: Facsimile number: Electronic mail address:
GCC 18.1	The scope of Supply shall be defined in: As specified in section 6, Schedule of Requirements. and section 7: Technical specification

| GCC 22.2 | The packing, marking and documentation inside and outside the packages shall be:
A complete packing list indicating the content of each package shall be enclosed in a waterproof Envelope and shall be secured to the outside of the packing case. In addition, each package shall be marked with indelible ink/paint in bold letters, as follows :

Name and address of Procuring Entity
Name of the Supplier
Contract Description
Final Destination/Delivery Point
Gross weight
Package number of total number of packages
Brief description of the content
Any special lifting instructions
Any special handling instructions

Upright markings, where appropriate, shall be placed on all four vertical sides of the package.

All material used for packing shall be environmentally neutral.

Additional markings and documentation within and outside the packages shall be :
1) The Supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights, shall take into consideration, where appropriate, the remoteness of final destination of the supply and the absence of heavy handling facilities at all points in transit.

2) The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract and in any subsequent instructionsordered by the Purchaser.

3) The supplier shall provide such crate for shipment of goods as to protect the equipment and materials.

4) Delivery of the goods shall be made by the Supplier in accordance with the terms and conditions of the contract and the goods shall remain at the risk of the Supplier until delivery has been completed. Delivery shall be considered to have been completed when the last consignment to be delivered are accepted and taken over by the Purchaser at the final destination. All transportation, insurance and other costs incurred in delivering the goods to the final destination shall be entered in the Tenderer's price schedule.

5) The Supplier warrants that the goods supplied under the Contract are new and unused of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

6) The Supplier further warrants that all goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except in so far as the design or material is required by the Purchaser's Specifications) or from any act or omission of the Supplier, that may develop under normal use of the |

Supplied Goods in the conditions obtaining in the country of final destination.

7) No goods should be shipped, without prior instruction from the Engineer /Purchaser. In cases, where the goods have been passed inspection but the Contractor from the Engineer/Purchaser has not received the instruction of delivery within one month from the date of inspection, the contractor may proceed with the shipment. In case of ex-factory basis delivery for domestic goods, the purchaser shall arrange to lift the goods from the specified place of the factory/warehouse within 30 (thirty) days after the date of inspection/ acceptance certificate issued by the Purchaser.

8) All air cargoes destined for the site shall be landed at Hazrat Shahjalal International airport of Dhaka as specified in Tender Document.

9) Any items liable to be damaged in transit shall be effectively protected and securely fixed in their cases. All lists of over 1(one) ton shall be marked to show where slings should be placed.

10) The Supplier shall give complete shipping information concerning the weight, size, content of each package including any other information the Purchaser or the Engineer may require.

11) All materials used in packing are to comply with the relevant Bangladesh regulations. Adequate protection and precautions are to be taken to exclude termites or other vermin, noxious insects, larva or fungus from the packing materials or plant. All contents are to be clearly marked for easy identification against the packing list.

12) All galvanized ferrous materials shall, in any case, not be touched with water and shall not be handled with any chemical products during transportation to prevent the corrosive effect to the galvanized surface.

13) The Supplier shall pack and crate all goods for export to a tropical, humid climate and for ocean transport and in accordance with internationally accepted export practice and such a manner as to protectit from damage and deterioration in transit by truck, rail and sea. The Supplier shall be held responsible for and make good any and all damages costs involved due to improper and inadequate packing. Each box or other unit of shipment shall be eligible and properly marked in addition to the usual Supplier's marking code. Detailed instructions for marking shown are given in tender document and such marking shall be written either on the box itself or on a metallic tag for drums, steel section etc. strongly attached to the Equipment.

14) Two bands red and green, each 25 mm (1 inch) wide or combined width not exceeding one- quarter the length of the package shall be painted around the package as shown in figure.

15) The following monogram, measuring about one quarter of the side of the package shall also be painted in red on at least two sides of the package.

<div align="center">

BANGLADESH
POWER DEVELOPMENT BOARD

</div>

16) All equipment is to be packaged in bundles and labeled for the appropriate town according to the list that will be provided to the successful Tenderer for each lot. Any items liable to be damaged in transit shall be effectively protected and securely fixed in their cases. All lifts of over 2 tones shall be

marked to show where slings should be placed.

All identification marks on the outside of cases are to be waterproof and permanent and as shown in Figures.

17) All delicate. electrical equipment shall be adequately sealed and desiccating agents used where necessary to prevent damage from condensation. All equipment shall be packed and protected bearing in mind that it will be shipped to a tropical zone and that a considerable period may elapse between its arrival on site and its unpacking.

18) Other electrical equipment items shall be packed for transport to site so that they are protected against the climatic conditions and handling to which they may be subjected in transit and in storage at the site. They shall be enclosed in planked wooden boxes with hoop metal bindings with ends sealed. Bindings shall be of rust less material.

19) The Supplier shall pack and crate all Equipment for export to a tropical , humid climate and for ocean transport and in accordance with internationally accepted export practice and in such a manner as to protect it from damage and deterioration in transit by truck, rail and sea. The Supplier shall be held responsible for and make good any and all damages costs involved due to improper and inadequate packing.

20) Each box or other unit of shipment shall be legible and properly marked in addition to the usual Suppliers marking code. Detailed instructions for marking as shown in Figure shall be written either on the box itself or on a metallic tag for drums, steel section etc, strongly attached to the Equipment.

21) Contents of cases are to be bolted securely or fastened in position with struts or cross battens and not with wooden chocks wedged in place unless otherwise firmly fastened. All struts or cross battens are preferably to be supported by cleats fixed to the case, above and below, to form edges on which the batten may rest. Open cases shall not be used. Where parts are required to be bolted to m the sides of the case, large washers are to be used to distribute the pressure and the timber is to be strengthened by means of a pad.

22) All cases shall be clearly identified giving particulars of manufacturers name and type of equipment.
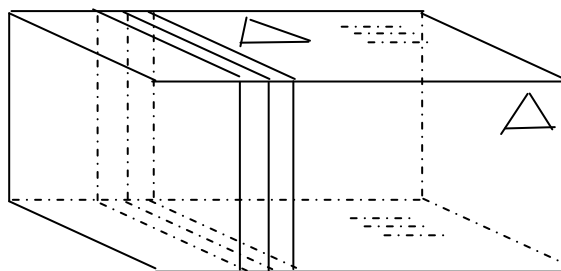
GCC 23.2	Details of shipping and documents to be furnished by the Supplier shall be:

Upon shipment of goods, the Supplier shall notify the Purchaser and the Insurance Company by Cable or fax or telex: the full details of the shipment including Contract number, description of Goods, quantity, the bill of landing number and date, port of loading, date of shipment, port of discharge, etc. The Supplier shall mail the following documents to the Purchaser, with a copy to the Insurance Company: as applicable:

    i)   Copies of the Supplier's invoice showing goods description, quantity, unit price, total amount.

    ii)   1(one) original and 8 (eight) copies of the negotiable, clean, on-board bill of lading marked freight Pre-payment and 8 (eight) copies of non-negotiable bill of lading, where applicable.

    iii)   8 (Eight) copies of packing list identifying contents of each package;

    iv)   Insurance certificate;

    v)   Certificate of origin;

    vi)   Manufacturer's/supplier's warranty certificate;

    vii) Inspection certificate, issued by the nominated inspection agency (or Purchaser's Inspection Team) and/or the Supplier's factory inspection report (if any);

    viii) Shipping advice issued by the Purchaser;

    ix)   Freight Memo/Truck Challan;

    x)   Satisfactory Routine Test Report approved by competent authority

3) The Purchaser shall receive the above documents at least one week before arrival of Goods at the port and, if not received, the Supplier will be responsible for any consequent expenses.

4) The negotiable sets of documents shall be originals signed by the Supplier. The Commercial Invoice is to show material value plus freight as applicable.

Shipping Documents

The Purchaser shall receive the shipping documents at the latest one-week before arrival of cargoes at the airport of Dhaka or any sea/land port of entry in Bangladesh.

The shipping documents shall be supplied to as follows:

1	Director, Purchase, BPDB, WAPDA Building, Motijheel C/A., Dhaka 1000	2 (Two) sets
2	Director, Finance, Biddyut Bhaban (7th Floor), 1 Abdul Gani Road, Dhaka-1000	2 (Two) sets
3	Director, Clearance & Movement, BPDB, Chittagong/Dhaka	2 (Two) sets
4	Deputy Director,Clearance & Movement BPDB, Chittagong/Dhaka /Khulna	1 (one) set
5	Dy. Director, Insurance, BPDB, Dhaka	1 (one) set

No goods should be shipped or delivered without prior instruction (shipping advice) from the Purchaser.

For Goods from within the Purchaser's country as per INCOTERM EXW:

Upon delivery of the Goods to the transporter, the Supplier shall notify the Purchaser

	and send the following documents to the Purchaser:
	(a) 8 copies of the Supplier's invoice showing the description of the Goods, quantity, unit price, and total amount; (b) delivery note, railway receipt, or truck receipt; (c) Manufacturer's or Supplier's warranty certificate; (d) inspection certificate issued by the nominated inspection agency, and the Supplier's factory inspection report; and (e) Certificate of origin. (f) Satisfactory Routine Test Report approved by competent authority. The Purchaser, shall receive the above documents before the arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses.
GCC24.3(New Clause)	Acceptance Certificate will be issued within fourteen (14) days after successfully completion of Post Landing Inspection, Satisfactory R&I Report and Successfully completion of related service (if any).
GCC 25.1	The Contract Price is ....
GCC 25.3	For Goods manufactured outside Bangladesh and are to be imported, customs duties, import VAT and other import taxes levied on the imported Goods will be paid by Purchaser. Hence contract price will not include these costs.
GCC26.2	Responsibility of the Purchaser and Supplier is: Marine Insurance as well as Local Insurance cost shall be paid by BPDB. Hence these costs shall not be included in the contract price.
GCC 27.1	(a) Payment of foreign currency portion shall be made through Letter of Credit (L/C) opened in favor of the Supplier in a schedule Bank of Bangladesh. (b) Payment of Local currency portion shall be made direct through CP & AA Cell, BPDB, Dhaka. **1. Payment for Goods supplied from abroad (Form PG4-3B):** **i) Advance Payment: Not Applicable** **ii) On Shipment:** Seventy (70) percent of the foreign currency Price of the Goods shipped shall be paid through letter of credit opened in favour of the Supplier in a bank in its country, upon submission of documents specified in GCC Clause 23. and issuance of payment advice by the Director, Purchase, BPDB **iii) On Acceptance:**Thirty (30) percent of the foreign currency price of Goods received shall be paid upon receipt of the goods within thirty (30) days of submission of claim bill duly verified by Consignee, certified by Engineer and payment certified by the Director, Purchase, BPDB supported by the Acceptance Certificate issued by the Director, Purchase, BPDB specified in GCC Clause 24. a) Partial Shipment is allowed. For a Tender (or for a lot of Tender), if contract is signed for a single item (as per price schedule), then only partial payment against On Shipment is allowed for shipment/ supply of partial quantities. Otherwise, partial payment is not allowed. b) Transshipments allowed as and when/where required as per prior approval of the procuring entity. c) Third Party B/L shall be allowed as and when/where required as per prior approval

	of the procuring entity.
	100% (hundred) percent Payment of local currency portion shall be made in Bangladesh **Taka** within thirty (30) days of presentation of claim bill duly certified by Director, Purchase, BPDB supported by Acceptance Certificate declaring that the Goods have been delivered and that all other contracted Related Services have been performed.
	1. Payment for Goods manufactured outside Bangladesh, already imported (PG4-3C), Payment for Goods manufactured in Bangladesh (PG4-3A) and Payment for Services (PG4-3D): **i) Advance Payment: Not Applicable** **ii) On Delivery and Acceptance:** Hundred (100%) percent of the Contract Price of the related service (PG4-3D) shall be paid within thirty (30) days upon approval of Inspection and Tests as specified in GCC Clause 32.1-32.4 (A, B, C) supported by the shipment/delivery order issued by the Director, Directorate of Purchase, BPDB. **BANKING CHARGES:** a) Letter of Credit opening and other charges including amendment charges within Bangladesh shall be borne by BPDB and those outside Bangladesh shall be borne by the supplier. b) The supplier shall have to bear all such charges both inside and outside Bangladesh in case of extension of L/C if done at the request of the supplier.
GCC 27.3	Payments shall be made in no case later than the 60(sixty)days after submission of an invoice or request for payment by the Supplier, and after the Purchaser has accepted it.
GCC 27.5	The payment-delay period after which the Purchaser shall pay interest to the supplier shall be [*Nil*] days. : **Not Allowed**
GCC 28.2	The Contractor / supplier shall secure and maintain throughout the duration of the contract insurance of such types and in such amounts as may be necessary to protect himself and the interest of BPDB/ Purchaser against hazards of risk or loss at BPDB'S cost. Failure of the Contractor/ supplier to maintain such coverage shall not relieve him of any contractual responsibility or obligations for transportation and ocean cargo insurance from port of loading to port of unloading and from warehouse to warehouse in Bangladesh. As Marine insurance as well as Local Insurance shall be from M/S. Sadharan Bima Corporation, 139, Motijheel Commercial Area, Dhaka, Bangladesh and the cost shall be paid by BPDB/Purchaser, the supplier shall promptly furnish 2(two) sets of shipping documents i.e. copies of Bill of Lading / Air way Bill, invoice, Packing list etc, of each and every consignment for insurance purpose directly to the Deputy Director, Finance (Insurance), Bangladesh Power Development Board, Abdul Gani Road, Dhaka, Bangladesh indicating the Purchase order/ contract No. and date insurance cover note (open Policy) number, Bill of lading and invoice No. and date, invoice C&F value, name of Port loading and unloading, name of goods with number of cases/ packages name of vessel with present age, flag of vessel and type of cargo, well ahead or immediately after shipment to the Consignee for payment of insurance charge by BPDB. If the Contractor /supplier fail to comply with these instructions they shall be held fully responsible for any loss or damage arising out of the non-compliance of these

	contract conditions.
	Shipment of goods in any chartered vessel over 15(fifteen) years of age and shipment of goods in the Deck are prohibited.
GCC 29.2	**a) Bangladesh Income tax and VAT for Income Earned in Bangladesh** i) The Supplier shall be entirely liable to pay Income Tax on Contract price both Foreign & Local Currency (including CFR price) at the prevailing rule of the Government of Bangladesh. Such Income Tax will be deducted at source from the Contractor's invoice/bill during payment as per Income Tax Ordinance- 1984. ii) The Supplier shall not be responsible for payment of applicable Value Added Tax (VAT) on the imported permanent materials and equipment's (i.e. CFR portion) of the contract price. BPDB will pay the same VAT during clearing stage at the port. If any VAT applicable on CFR portion at payment stage, BPDB will adjust/pay that amount. But, the applicable VAT on the service portion of the contract price both foreign and local currency shall be paid by the supplier which will be deducted at source from the supplier's invoice/bill during payment. **b) Foreign country Taxes and Permits** The Supplier shall pay all sales, income and other taxes and duties, tariffs and imports that can be lawfully assessed against the supplier by the Government or any lawful authority of any country other than the people's Republic of Bangladesh which has jurisdiction over the Supplier in connection with this contract and shall pay for all licenses permits and inspection required for the supply including the cost or securing all export licenses and permits for materials, equipment, supplies and personnel exported from that country to Bangladesh. **c) Import related duties, taxes, VAT, levies** BPDB will be responsible for the payment of import related duties, taxes, VAT, levies and all sort of charges etc. to be liable by the port as well as other Govt. agencies inside Bangladesh for the goods to be imported in accordance with the specification. But BPDB shall not pay the custom duty on any replacement/ additional items.
GCC 32.1 - 32.4	**THE INSPECTIONS AND TESTS SHALL BE:** ***A.*** **Pre-delivery inspection and/or Witnessing of the manufacturing process and tests of the equipment at manufacturer's works including transfer of technical know-how.** Within 07 days after signing of Contract, the Contractor/Supplier shall inform BPDB the details of Pre-Shipment Inspection/Factory Acceptance Test such as Name of equipment/ machine/ materials/ goods/ parts/ spares to be tested/inspected, Name of tests/Inspection, time schedule, Period of Technical Orientation and Quality Test Witness, location/place of inspection, duration of inspection/test etc. Type tests, routine tests, sample tests and other tests as agreed upon shall be performed as per procurement contract of BPDB and relevant international standard. Witnessing of manufacturing process/ tests shall encompass Transfer of Technology, Technical know-how regarding spares, parameters and testing procedure including familiarization of test equipment to BPDB'srepresentative(s). The Contractor/Supplier shall bear the round air tickets, hotel accommodations, per diem allowances, internal transportations and out of pocket expenses **@ US$ 100.00** per person per day for 7 (Seven) days (excluding travel time) if manufacturing outside the Employer's Country for the witnessing of manufacturing process and

tests of concerned equipment at manufacturer's works. The number of BPDB engineers will be **03 nos.** Such witness/inspection shall not relieve the supplier from any obligation to supply the goods in accordance with contract document. For foreign manufacturer, Invitation letter from the manufacturer should be submitted to the purchaser at least 02(two) months prior to the schedule date of the witness and tests.

For any reason, if BPDB'srepresentative(s) cannot attend the "Pre-delivery inspection and/or Witnessing of the manufacturing process and tests of the equipment at manufacturer's works including transfer of technical know-how" Program, BPDB shall engage a Third Party Inspection Company/Agency to conduct the Pre-shipment Inspections and/or witness Factory Acceptance Tests as per Contract and relevant international standard at the manufacture's Premises. The Inspection Company/Agencyshall be entitled to attend the test and/or inspection as stated in this Contract, provided that the Contractor/ Manufacturer/ Supplier shall obtain any necessary permission or consent to enable the Inspection Company/Agencyto attend the tests and/or inspection. The Inspection Company/Agencymay be accompanied by BPDB's personnel during inspections/ tests.

BPDB will select any of the following companies/agencies as Third Party Inspector:
- BUREAU VERITAS
- SGS
- Black and Veatch
- TUV SUD
- Lloyd Inspection Agency
- Mott MacDonald
- Intertek Group

The Third-Party Inspector shall submit a comprehensive report to Purchaser with recommendation accompanied with picture, video clips (with date and time stamp) with Inspector(s) and Manufacturer's representatives(s) at the test/inspection venue of the Equipment/ Materials/ Goods inspected within 7 days after completion of respective inspection/Test. After approval of Third-Party Inspection report by BPDB, shipping advice shall be issued to Supplier/ Contractor.

The Contractor/ Supplier shall bear cost pertaining to third party inspection team/BPDB's representative(s). Manufacturer/ Supplier/ Contractor shall facilitate and provide full support for the Pre-Shipment Inspection/Witnessing of Factory Acceptance Test and transfer of technical know-how to BPDB representative(s).

The third-party inspection company/agency must not be involved in design, procurement, fabrication, construction and installation under this Contract. Third party inspection is applicable for Equipment/ Materials/ Goods manufactured outside in Bangladesh.

As and when the purchaser is satisfied that any Equipment/ Materials/ Goods shall have passed the tests/inspection referred to in this clause, purchaser shall notify the contractor in writing to that effect.

Should any inspected/tested goods fail to conform to the specification, the Purchaser shall have the right to reject any of the items or complete batch if necessary. In that case Contractor/ Supplier has to replace the Equipment/ Materials/ Goods and to make good of them without any financial involvement to the Purchaser.

In case any of the Equipment found not conforming with the specification at the time of post landing Inspection, the Contractor/ supplier will in no way be relieved from the responsibility of replacing them or making them good at their own cost, despite the Equipment were found good at the time of Factory Acceptance Test/ Pre-delivery Inspection.Such witness/inspection shall not relieve in any way the

	Contractor/ supplier from any warranty or other obligations under the contract.
	No goods/equipment/material shall be packed, prepared for shipment / delivery unless it has been approved including Test reports and written instruction has been issued by the Purchaser.
	B. RANDOM SAMPLE TEST DURING FACTORY INSPECTION AND WITNESS will be held (where required) will be held and detail description is provided in Section 7: Technical Specification.
	Section 1.03 **C. ACCEPTANCE REPORT OF GOODS FOR DELIVERY** as per Section 7.
	D. POST-DELIVERY INSPECTION &TESTING will be held in the following manner:
	a) Post Landing Inspection shall be done after arrival of the goods at **Final destination.** The post landing inspection shall be intimated to the representative of Supplier. The program of such inspection shall be intimated to the representative of contractor/supplier by BPDB upon arrival of the goods at Final destination store of BPDB. R&I report will be issued after *POST-DELIVERY INSPECTION*.
	b) The purchaser has right toinspect, test and where necessary, rejectthe Goods arrival in purchaser's store shall in no way be limited or waived by reason of the goods having previously been tested and passed by the manufacturer/ supplier.
	c) Nothing in this clause shall in any way release the Supplier from any warranty or other obligation under provisions of the contract.
	d) Detail description is provided in Section 7: Technical Specification
GCC 33.3	The period of validity of the Warranty shall be 36(thirty-Six) months from the date of acceptance of Goods. During the warranty period, if any equipment/material is damaged and replaced by the Supplier, fresh warranty period for 36(thirty-Six) months shall be counted for the replaced equipment/material. Total warranty period shall not increase more than 72(seventy-two) months in any case.
	For the purpose of warranty, the place of final destination shall be:*Central Store, BPDB, Tongi,Gazipur*as per instruction of Engineer.
GCC 33.6	The Supplier shall correct any defects covered by the Warranty within 90(Ninety) days of being notified by the Purchaser of the occurrence of such defects.
GCC 35.1	The applicable rate for liquidated damages for delay shall be: 0.5 (zero point five) per cent of the Contract Price of the delayed Goods or unperformed Related services for each week of delay until actual delivery or performance. All Goods and related services shall be considered as delayed and unperformed until the effective date of Acceptance Certificate. Hence Liquidated Damages for delay or Delay Damages until effective date of Acceptance Certificate shall be applicable on the final Contract Price.
	The maximum amount of liquidated damages shall be *Ten (10%) percent of the Contract Price.*
GCC 47.2(b)	The name of the Adjudicator: shall be selected when necessary The name of the appointing authority of the Adjudicator:President, Institution of Engineers, Bangladesh (IEB)

GCC 47.3(b)	Any dispute, Controversy or claim arising out of or relating to this contract or breach, termination or invalidity thereof shall be settled by arbitration in accordance with Arbitration act (Act No 1 of 2001) of Bangladesh as at present in force. Arbitration shall take place in Dhaka, Bangladesh.
GCC 48 (New Clause)	**Submission & Approval of Design, Drawing, Specification & GTP/Engineering Data:** Design, Drawing, Specification & GTP/ Engineering Data etc, shall be submitted to the Engineer, Director, Design & Inspection–II, BPDB by the Supplier for approval, prior to the manufacturing of the goods. The Supplier shall have to submit 3 (three) sets of the same for approval within **15 (fifteen) days** from the date of signing Contract. Only Original copy shall be submitted (photocopy / scanned copy will not be allowed). One copy of Design, Drawing, Specification & GTP/ Engineering Data shall be returned to the Supplier marked "APPROVED" or "APPROVED AS NOTED" or "RETURNED FOR CORRECTION" within **14 (Fourteen) days** after receipt from the Supplier and if not returned within **14 (Fourteen) days** after receipt by the Engineer, the Suppliers shall notify Engineer of such fact, and if the Design, Drawing, Specification & GTP/ Engineering Data still have been not returned within **7(Seven) days** after notice, the Supplier may proceed as if Design, Drawing, Specification & GTP/ Engineering Data have been returned approved. When the Design, Drawing, Specification & GTP/ Engineering Data are returned marked "APPROVED AS NOTED" or "RETURNED FOR CORRECTION" the corrections or changes shall be made and 3 (three) revised copies shall be submitted to the Engineer. One copy of the revised Design, Drawing, Specification & GTP/ Engineering Data will be returned to the Supplier by **7(Seven) days** from the receipt of the same with due approval, if re-submitted Design, Drawing, Specification & GTP/ Engineering Data are in line with the earlier comments of the Engineer and satisfy contract specification.

Section 5. Tender and Contract Forms

Form	Title

i. Tender Forms

Form	Title
PG4 – 1	Tender Submission Letter
PG4 – 2	Tenderer Information Sheet
PG4-2A	Subcontractor Information
PG4 – 3A,3B & 3C	Price Schedule for Goods
PG4 – 3D	Price Schedule for Related Services
PG4 – 4	Specifications Submission and Compliance Sheet
PG4 – 5	Manufacturer's Authorisation Letter
PG4 – 6	Bank Guarantee for Tender Security
PG4 – 6A	Bank's Commitment for Line of Credit *(when this option is chosen)*
PG4-11	Deviation List

ii. Contract Forms

Form	Title
PG4 – 7	Notification of Award
PG4 – 8	Contract Agreement
PG4 – 9	Bank Guarantee for Performance Security
PG4 – 10	Bank Guarantee for Advance Payment
PG4-12	Warranty Certificate

Forms PG4-1 to PG4-6A and PG4-11 comprises part of the Tender and should be completed as stated in ITT Clause 21.

Forms PG4-7 to PG4-10 and PG4-12 comprises part of the Contract as stated in GCC Clause 5.

Tender Submission Letter (Form PG4 – 1A)

(To be submitted with technical Proposal)

[This letter shall be completed and signed by the <u>Authorised Signatory</u>
preferably on the Letter-Head pad of the Tenderer].

To:	Date:
[Contact Person]	
[Name of Purchaser]	
[Address of Purchaser]	
Invitation for Tender No:	*[indicate IFT No]*
Tender Package No:	*[indicate Package No]*
Lot No:	*[indicate number of Lots]*

We, the undersigned, offer to supply in conformity with the Tender Document the following Goods and related Services:

In signing this letter, and in submitting our Tender, we also confirm that:

a) our Tender shall be valid for the period stated in the Tender Data Sheet (ITT Sub-Clause 27.2) and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

b) a Tender Security is attached in the form of a *bank guarantee]* in the amount stated in the Tender Data Sheet (ITT Clause 29) and valid for a period of 28 days beyond the Tender validity date;

c) if our Tender is accepted, we commit to furnishing a Performance Security in the amount stated in the Tender Data Sheet (ITT Sub-Clause 63.2) in the form stated in Tender Data Sheet (ITT Sub-Clause 64.1) and valid for a period of 28 days beyond the date of completion of our performance obligations;

d) we have examined and have no reservations to the Tender Document, issued by you on *[insert date];*

   including Addendum to Tender Documents No(s) [*state numbers*] ,issued in accordance with the Instructions to Tenderers (ITT Clause 11). *[insert the number and issuing date of each addendum; or delete this sentence if no Addendum have been issued];*

e) we, including as applicable, subcontractor for any part of the contract resulting from this Tender process, have nationalities from eligible countries, in accordance with ITT Sub-Clause 5.1;

f) we are submitting this Tender as a sole Tenderer

g) we are not a Government owned entity as defined in ITT Sub-Clause 5.3

or

we are a Government owned entity, and we meet the requirements of ITT Sub-Clause 5.3];

(*delete one of the above as appropriate*)

h) we, declare that we are not associated, nor have been associated in the past, directly or indirectly, with a consultant or any other entity that has prepared the design, specifications and other documents, in accordance with ITT Sub-Clause 5.5;

i) we, including as applicable subcontractor have not been declared ineligible by the Government of Bangladesh on charges of engaging in corrupt, fraudulent, collusive or coercive practices, in accordance with ITT Sub-Clause 5.6;

j) furthermore, we are aware of ITT Sub Clause 4.3 concerning such practices and pledge not to indulge in such practices in competing for or in executing the Contract;

k) we intend to subcontract an activity or part of the Supply, in accordance with ITT Sub-Clause 16.1 to the following Subcontractor(s);

Nature of the Supply or related service	Name and address of Subcontractor

l) we, confirm that we do not have a record of poor performance, such as abandoning the Supply, not properly completing contracts, inordinate delays, or financial failure as stated in ITT Sub-Clause 5.8, and that we do not have, or have had, any litigation against us, other than that stated in the Tenderer Information Sheet(Form PG4-2);

m) we are not participating as Tenderers in more than one Tender in this Tendering process. We understand that your written Notification of Award shall become a binding Contract between us, until a formal Contract is prepared and executed;

n) we understand that you reserve the right to accept or reject any Tender, to cancel the Tender proceedings, or to reject all Tenders, without incurring any liability to Tenderers, in accordance with ITT Clause 58.1.

Signature:	*[insert signature of authorised representative of the Tenderer]*
Name:	*[insert full name of signatory with National ID]*
In the capacity of:	*[insert designation of signatory]*

Duly authorised to sign the Tender for and on behalf of the Tenderer

[If there is more than one (1) signatory add other boxes and sign accordingly].

Attachment 1: Written confirmation authorising the above signatory(ies) to commit the Tenderer, in accordance with ITT Sub-Clause 34.3;

Tender Submission Letter (Form PG4 – 1B)

(To be submitted with Financial Proposal)

[This letter shall be completed and signed by the <u>Authorised Signatory</u> preferably on the Letter-Head pad of the Tenderer].

To:	Date:
[Contact Person]	
[Name of Purchaser]	
[Address of Purchaser]	
Invitation for Tender No:	*[indicate IFT No]*
Tender Package No:	*[indicate Package No]*
Lot No:	*[indicate number of Lots]*

We, the undersigned, offer to supply in conformity with the Tender Document the following Goods and related Services:

In accordance with ITT Clauses 22 and 23, the following prices and discounts apply to our Tender:

The Tender Price is: (ITT Sub-Clause 23.1)	*Taka [state amount in figures] and Taka[state amount in words]*
Mandatory Spare parts Price (If economic Factor is applicable) (ITT Sub-Clause 52.2 (f) & 52.5 (b)	*Taka [state amount in figures] and Taka[state amount in words]*
In Accordance with ITT sub clause 23.9 (a) and 23.9 (b) the unconditional discount offered by us is: (This discount shall be applicable on all the items of Price Schedule after Arithmetical Correction)	*Taka [state amount in figures] and Taka[state amount in words]*
The methodology for Application of the discount is: (ITT Sub-Clause 23.9)	*[state the methodology]*
The advance payment is: (GCC Sub-Clause 27.1)	*[state the amount based on percentage of the Tender Price]*
and we shall accordingly submit an Advance Payment Guarantee in the format shown in Form PG4 - 10.	

In signing this letter, and in submitting our Tender, we also confirm that:

a) our Tender shall be valid for the period stated in the Tender Data Sheet (ITT Sub-Clause 27.2) and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

b) a Tender Security is attached in the form of a *bank guarantee]* in the amount stated in the Tender Data Sheet (ITT Clause 29) and valid for a period of 28 days beyond the Tender validity date;

c) if our Tender is accepted, we commit to furnishing a Performance Security in the amount stated in the Tender Data Sheet (ITT Sub-Clause 63.2) in the form stated in Tender Data Sheet (ITT Sub-Clause 64.1) and valid for a period of 28 days beyond the date of completion of our performance obligations;

d) we have examined and have no reservations to the Tender Document, issued by you on *[insert date];*

including Addendum to Tender Documents No(s) [*state numbers*] ,issued in accordance with the Instructions to Tenderers (ITT Clause 11). *[insert the number and issuing date of each addendum; or delete this sentence if no Addendum have been issued];*

e) we, including as applicable, subcontractor for any part of the contract resulting from this Tender process, have nationalities from eligible countries, in accordance with ITT Sub-Clause 5.1;

f) we are submitting this Tender as a sole Tenderer

g) we are not a Government owned entity as defined in ITT Sub-Clause 5.3

or

we are a Government owned entity, and we meet the requirements of ITT Sub-Clause 5.3];
   (*delete one of the above as appropriate*)

h) we, declare that we are not associated, nor have been associated in the past, directly or indirectly, with a consultant or any other entity that has prepared the design, specifications and other documents, in accordance with ITT Sub-Clause 5.5;

i) we, including as applicable subcontractor have not been declared ineligible by the Government of Bangladesh on charges of engaging in corrupt, fraudulent, collusive or coercive practices, in accordance with ITT Sub-Clause 5.6;

j) furthermore, we are aware of ITT Sub Clause 4.3 concerning such practices and pledge not to indulge in such practices in competing for or in executing the Contract;

k) we intend to subcontract an activity or part of the Supply, in accordance with ITT Sub-Clause 16.1 to the following Subcontractor(s);

Nature of the Supply or related service	Name and address of Subcontractor

l) we, confirm that we do not have a record of poor performance, such as abandoning the Supply, not properly completing contracts, inordinate delays, or financial failure as stated in ITT Sub-Clause 5.8, and that we do not have, or have had, any litigation against us, other than that stated in the Tenderer Information Sheet(Form PG4-2);

m) we are not participating as Tenderers in more than one Tender in this Tendering process. We understand that your written Notification of Award shall become a binding Contract between us, until a formal Contract is prepared and executed;

n) we understand that you reserve the right to accept or reject any Tender, to cancel the Tender proceedings, or to reject all Tenders, without incurring any liability to Tenderers, in accordance with ITT Clause 58.1.

Signature:	*[insert signature of authorised representative of the Tenderer]*
Name:	*[insert full name of signatory with National ID]*
In the capacity of:	*[insert designation of signatory]*

Duly authorised to sign the Tender for and on behalf of the Tenderer

[If there is more than one (1) signatory add other boxes and sign accordingly].

Attachment 1: Written confirmation authorising the above signatory(ies) to commit the Tenderer, in accordance with ITT Sub-Clause 34.3;

Tenderer Information Sheet (Form PG4-2)

[The Tenderer shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted]

Invitation for Tender No: *[Indicate IFT No]*	Date *[Insert date of Tender Submission]*
Tender Package No: *[Indicate Package No]*	

A. Individual Tenderers

1.	***Eligibility Information of the Tenderer [ITT Clauses 5 & 21]***	
1.1	Tenderer's Legal Name:	
1.2	Tenderer's legal address in Country of Registration	
1.4	Tenderer's Year of Registration	
1.5	Tenderer's Authorised Representative Information	
	Name	
	National ID number	
	Address	
	Telephone / Fax Numbers	
	e-mail address	

1.6   Attached are copies of original documents of : *[check box(es) of the attached original documents]*

□   *Articles of Incorporation or Registration of firm named in 1.1, in accordance with ITT sub-Clause 5.1and 5.2]*

□   *In case of government owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITT Sub-Clause 5.3*

□   *An affidavit confirming the legal capacity stating that there are no existing orders of any judicial court that prevents either the tenderer or employees of a tenderer entering into or signing a Contract with the Purchaser in accordance with ITT clause 5*

□   *An affidavit confirming that the tenderer is not insolvent, in receivership or not bankrupt or not in the process of bankruptcy, not temporarily barred from undertaking their business for financial reasons and shall not be the subject of legal proceedings for any of the foregoing in accordance with ITT Clause 5.*

□   *A certificate issued by the competent authority of Bangladesh stating that the Tenderer is a Tax payer having valid Tax identification Number (TIN) and VAT registration number or in lieu any other document acceptable to the Purchaser demonstrating that the Tenderer is a genuine Tax payer and has a VAT registration number as a proof of fulfillment of taxation obligations in accordance with ITT Clause 5 .*

□   *Documentary evidence demonstrating that they are enrolled in the relevant professional or trade organizations registered in Bangladesh in accordance with ITT Clause 5.*

2. Litigation History: *[Number of arbitration awards against the tenderer over the period in accordance the ITT Clause 13.1] if no [state "None"]*

3.	*Qualification Information of the Tenderer:*	
3.1	*Number of years of overall experience of the Tenderer in the supply of goods and related services as stated under ITT Sub-Clause14.1(a):*	
3.2	*Number of completed supply contracts in the supply of similar goods and related services of required value within the period mentioned in TDS as stated under ITT Sub-Clause 14.1(b):* ▪ *Number of Contracts:* ▪ *Value of the Contracts:* ▪ *Period of the Contract:*	

3.3	*The supply and/or production capacity of Goods, if applicable, as stated under ITT Sub-Clause 14.(c)*	
3.4	*Available liquid assets or working capital or credit facility in accordance with ITT Clause 15.1(a)*	

Subcontractor Information (Form PG4-2A)

[This Form should be completed by each Subcontractor, preferably on its Letter-Head Pad]

Invitation for Tender No: *[IFT No]*

Tender Package No   *[Package No]*

Lot No. (*when applicable*)   *[Lot No]*

1.	Eligibility Information of the Subcontractor [*ITTClause5 and 26*]	
1.1	Nationality of Individual or country of Registration	
1.2	Subcontractor's legal title	
1.3	Subcontractor's registered address	
1.4	Subcontractor's legal status *[complete the relevant box]*	
	Proprietorship	
	Partnership	
	Limited Liability Concern	
	Government-owned Enterprise	
	Other (please describe)	
1.5	Subcontractor's year of registration	
1.6	Subcontractor's authorised representative details	
	Name	
	Address	
	Telephone / Fax numbers	
	e-mail address	
1.7	Subcontractor to attach copies of the following original documents	All documents to the extent relevant to ITTClause 5 and 26 in support of its eligibility
The following two information are applicable for national Subcontractors		
1.8	Subcontractor's Value Added Tax Registration (VAT) Number	
1.9	Subcontractor's Tax Identification Number(TIN)	

[The foreign Subcontractors , in accordance with ITT Sub Clause 5.1, shall provide evidence by a written declaration to that effect to demonstrate that it meets the criterion]		
2. Key Activity(ies) for which it is intended to be Subcontracted [ITT Sub Clause 16.1]		
2.1	Elements of Activity	Brief description of Activity
2.2	List of Similar Contracts in which the proposed Subcontractor had been engaged	
	Name of Contract and Year of Execution	
	Value of Contract	
	Name of Procuring Entity	
	Contact Person and contact details	
	Type of Good supplied or service provided or Works performed	

Annexure: 4-1 Tenderer's Completed Contracts
Annexure: 4-2 Tenderer's Ongoing Contract(s)
Annexure: 4-3 Assessment for Manufacturer's Compliance to Production Capacity
Annexure: 4-4 Assessment for Tenderer's Compliance to Financial Resources Availability

Tenderer's Completed Contracts:

Sl. No.	Name, Address, Phone No., Fax No. & domain E-mail of the Employer	Contract No. & Date	Description of Supply with quantity	Contract Value	Date of completion of Supply
1.					
2.					
3.					
4.					

I/We hereby declare that, above mentioned information* is correct and there are no more completed similar contracts in Government entities under power sector of Bangladesh other than those mentioned in the above table.

Signatory Name: Seal & Signature
Designation: of the Tenderer

*__*Note:*__This information shall have to be mentioned in the Letterhead pad of the Tenderer duly seal &signed along with supporting document. **Failure to submit or misrepresentation of the detail information for any completed similar contract, Tender shall be rejected without further evaluation.**

Annexure: 4-2

Tenderer's Ongoing Contract(s):

Sl. No.	Name, Address, Phone No., Fax No. & domain E-mail of the Employer	Contract /NOA No. & Date	Description of Supply as per Contract			Already supplied (if any)		Remaining items to be Supplied		Date of completion of Supply	
			Name of the Item	Quantity	Value	Quantity	Value	Quantity	Value	As per Contract	Target
(1)	(2)	(3)	(4)			(5)		6 = (4-5)		(7)	
Similar contract(s)											
1.											
2.											
3.											
4.											
Other contract(s) (if applicable)											
1.											
2.											
3.											
4.											

I/We hereby declare that, above mentioned information* is correct and there are no more ongoing contracts in Government entities under power sector of Bangladesh other than those mentioned in the above table.

Signatory Name: Seal & Signature
Designation: of the Tenderer

*__Note:__This information shall have to be mentioned in the Letterhead pad of the Tenderer duly seal &signed along with supporting document. **Failure to submit or misrepresentation of the detail information for any ongoing contract, Tender shall be rejected without further evaluation.**

Annexure: 4-3

Assessment for Manufacturer's Compliance to Production Capacity:

			Ongoing Similar Contracts Commitments (Table-3A)		
Sl. No.	Name, Address, Phone No., Fax No. & domain E-mail of the Employer	Contract /NOA No. & Date	Outstanding Supply quantity (X) ᵃ	Remaining Contract Period in months (Y) ᵇ	Monthly Production Requirement (X / Y)
1.					
2.					
3.					
4.					
Total Monthly Production Requirement for Ongoing Similar Contract(s) Commitments					

ᵃ Remaining outstanding supply quantity for ongoing similar contract(s)will be forwarded from **Annexure:4-2**and calculated from 28 days prior to the Tender submission deadline of this Tender.

ᵇ Remaining contract period to be calculated from 28 days prior to the Tender submission deadline of this Tender.

	Assessment of Production Capacity (Table-3B)			
Production capacity of Goods per month from Tenderer Information Sheet (Form PG4-2), Sl. No. 3.3 (A)	Total Monthly Production Requirement forOngoing Similar Contracts Commitmentsfrom Table- 3A (B)	Remaining Net Production Capacity per month C= (A-B)	Requirement of the minimum production capacity of Goods per monthfor this Tender (D)	Results: [C must be greater than or equal to D] (E*)
			[1/4ᵗʰ of the tendered quantity]	

Note: *"E"Must be satisfied to qualify the Tenderer.*

Annexure: 4-4

Assessment for Tenderer's Compliance to Financial Resources Availability:

Ongoing Contracts Commitments (Table-4A)					
Sl. No.	Name, Address, Phone No., Fax No. & domain E-mail of the Employer	Contract /NOA No. & Date	Outstanding Contract Value (X) ᵃ	Remaining Contract Period in months (Y) ᵇ	Monthly Financial Resources Requirement (X / Y)
1.					
2.					
3.					
4.					
Total Monthly Financial Requirement for Ongoing Contract(s) Commitments					

ᵃ Remaining outstanding supply valuefor ongoing contract(s) will be forwarded from **Annexure 4-2**and calculated from 28 days prior to the Tender submission deadline of this Tender.

ᵇ Remaining contract period to be calculated from 28 days prior to the Tender submission deadline of this Tender.

Assessment of Financial Resources Availability (Table-4B)					
Available Financial Resources from Tenderer Information Sheet (Form PG4-2), Sl. No. 3.4 (A)	Monthly Financial Resources Requirement forOngoing Contracts Commitmentsfrom Table- 4A (B)	Financial Requirement ofOngoing Contracts Commitments for 2(two) months C= (2*B)	Net amount Available Financial Resources D= (A-C)	Financial Requirement for this Tender (E)	Results: [D must be greater than or equal to E] (F*)
				BDT 24,61,80,000 or USD 22,38,000	

Note: *"E"Must be satisfied to qualify the Tenderer.*

Price Schedule for Goods (Form PG4-3A): Not Applicable

[Group A Tenders: Goods Manufactured in Bangladesh]

Invitation for Tender No:		Date:	
Tender Package No:	GRF-24	Package Description:	*[enter description as specified in Section 6]*
Tender Lot No:	1	Lot Description:	*[enter description as specified in Section 6]*

1	2	3	4	5	6	7	8	9	10	
Line Item No .	Description of Item	Unit of Measurement	Quantity	Unit price EXW *[FC or Taka.]*	EXW price per Line Item (Col. 4 × 5) *[FC or Taka.]*	Inland transportation and other local costs for the delivery of the Goods to their final destination *[Taka]*	Cost of local labour, raw materials and components from with origin in Bangladesh	VAT Payable on account of Supplier if the Contract is awarded *[Taka]*	Total Price per line item (Col. 6+7)	
									FC	Taka
Note : Price offered in foreign currency (FC) & Bangladesh Taka							**Total Price for Lot**			
Point of Delivery as per Schedule of Requirement:*Central Store, BPDB, Tongi, Gazipur.*						**Period of Delivery as per Schedule of Requirement:***[180 days as per schedule of requirement]*				

Name:	*[insert full name of signatory]*	*Signature with Date and Seal*
In the capacity of:	*[insert designation of signatory]*	*[Sign]*
Duly authorized to sign the Tender for and on behalf of the Tenderer		

Schedule for Goods (Form PG4-3B)
[Group B Tenders: Goods Manufactured outside Bangladesh, to be imported]

Invitation for Tender No:		**Date:**	
Tender Package No:	GRF-24	**Package Description:**	*[enter description as specified in Section 6]*
Tender Lot No:		**Lot Description:**	*[enter description as specified in Section 6]*

1	2	3	4	5	6	7	8	9	10	
Line Item No .	Description of Item	Country Of Origin	Unit of Measurement	Quantity	Unit price CFR(Cost plus Fright) [insert the port of destination] *[FC]*	CFR price per Line Item (Col. 5 × 6) *[FC]*	Inland transportation, Port Handling Charge and other local costs for the delivery of the Goods to their final destination *[Taka]*	VAT Payable on account of Supplier if the Contract is awarded *[Taka]*	Total Price per line item	
									FC (Col.7)	Taka (Col.8)
1	Supply of Single Phase Solid State Smart Prepayment Meter with BPLC Module. (As per Technical Specifications & GTP-Section:7)		Nos	55000						
Note : Price offered in foreign currency (FC) & Bangladesh Taka							**Total Price for Lot**			
Point of Delivery as per Schedule of Requirement: *Central Store, BPDB, Tongi, Gazipur.*							**Period of Delivery as per Schedule of Requirement::** [*180 days as per schedule of requirement*]			

[Note: The Purchaser may also use other INCOTERMs, if deemed necessary, In such case Form PG4-3B, will require to be customized by the Purchaser]

Name:	*[insert full name of signatory]*	*Signature with Date and Seal*
In the capacity of:	*[insert designation of signatory]*	*[Sign]*
Duly authorized to sign the Tender for and on behalf of the Tenderer		

Price Schedule for Goods (Form PG4-3C): Not Applicable

[*Group B Tenders: Goods Manufactured outside Bangladesh, already imported*]

Invitation for Tender No:		Date:	
Tender Package No:		Package Description:	*[enter description as specified in Section 6]*
Tender Lot No:		Lot Description:	*[enter description as specified in Section 6]*

1	2	3	4	5	6	7	8	9	10	11	12
Line Item No .	Description of Item	Country of Origin	Unit of Measurement	Quantity	Unit price Including Custom Duties, import VAT & other import taxes already paid *[Taka]*	Custom Duties, import VAT & other import taxes already paid per unit *[Taka]*	Unit Price per line item net of Custom Duties, import VAT & other import taxes already paid *[Taka]* (Col. 6 – Col.7)	Price per line item net of Custom Duties, import VAT & other import taxes already paid *[Taka]* (Col. 5X Col. 8)	Inland transportation and other local costs for the delivery of the Goods to their final destination *[Taka]*	VAT Payable on account of Supplier if the Contract is awarded *[Taka]*	Total Price per line item **(Col.9+ Col.10)** *[Taka]*
1											
Note : Price offered in Bangladesh Taka									**Total Price for Lot**		
Point of Delivery as per Schedule of Requirement:[*insert name of final destination of delivery*]							**Period of Delivery as per Schedule of Requirement::**				

Name:	*[insert full name of signatory]*	*Signature with Date and Seal*
In the capacity of:	*[insert designation of signatory]*	[Sign]
Duly authorized to sign the Tender for and on behalf of the Tenderer		

Price and Completion Schedule - Related Services (Form PG4-3D)

Invitation for Tender No:		**Date:**	
Tender Package No:	GRF-24	**Package Description:**	*[enter description as specified in Section 6]*
Tender Lot No:		**Lot Description:**	*[enter description as specified in Section 6]*

1	2	3	4	5	6	7	8	9	
Service No.	Description of Services (excludes inland transportation and other services required in Bangladesh to convey the goods to their final destination)	Country of Origin	Unit of Measurement	Quantity	Unit price of service *[FC] or [Taka]*	Price per line item of service **(Col. 5 X Col. 6)** *[FC] or [Taka]*	VAT Payable on account of Supplier if the Contract is awarded *[Taka]*	Total Price per line item of service **(Col. 7)**	
								FC	**Taka**
		[insert country of origin of the Service]			*[Insert unit price]*	*[Insert price per line item of service]*	*[Insert Supplier's VAT if Contract is awarded]*	*[Insert total price per line item of service]*	
1	Pre-Delivery Inspection And/or Witness Factory Acceptance Test (FAT) (as specified in Section-4: GCC 32.1-32.4)		Lot	LS					
Note Price offered in foreign currency (FC) & Bangladesh Taka						**Total Price for Lot**			

Point of Delivery as per Schedule of Requirement: [*insert name of final destination of delivery*]	**Period of Delivery as per Schedule of Requirement**

Name:	*[insert full name of signatory]*	*Signature with Date and Seal*
In the capacity of:	*[insert designation of signatory]*	*[Sign]*
Duly authorized to sign the Tender for and on behalf of the Tenderer		

Specifications Submission and Compliance Sheet
(Form PG4-4)

Invitation for Tender No: Date:

Tender Package No: Package   *[enter description as*
                                                          Description: *specified in Section 6]*

Tender Lot No: Lot   *[enter description as*
                                                          Description: *specified in Section 6]*

Item No.	Name of Goods or Related Service	Country of Origin	Make and Model (*when applicable)*	Full Technical Specifications and Standards
1	2	3	4	5
	FOR GOODS			Note 1
	FOR RELATED SERVICES			

[The Tenderer should complete all the columns as required]

Signature:	*[insert signature of authorised representative of the Tenderer]*
Name:	*[insert full name of signatory]*
In the capacity of:	*[insert designation of signatory]*

Duly authorised to sign the Tender for and on behalf of the Tenderer

Manufacturer's Authorisation Letter (Form PG4 - 5)

*[The Tenderer shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Tenderer shall include it in its tender, if so indicated in the **TDS as stated under ITT Sub-Clause26.1(b)**]*

Invitation for Tender No:	Date:
Tender Package No:	
Tender Lot No:	
To: Name and address of Purchaser]	

WHEREAS

We *[insert complete name of Manufacturer],*

who are official manufacturers of*[insert type of goods manufactured],* having factories at *[insert full address of Manufacturer's factories]*, do hereby

authorize*[insert complete name of Tenderer]* to supply the following Goods, manufactured by us *[insert name and or brief description of the Goods]*.

We hereby extend our full guarantee and warranty as stated under GCC Clause 33 of the General Conditions of Contract, with respect to the Goods offered by the above Tenderer.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: *[insert complete name(s) of authorized representative(s) of the Manufacturer]*
Address: *[insert full address including Fax and e-mail]*
Title: *[insert title]*

Date: [insert date of signing]

Bank Guarantee for Tender Security (Form PG4 – 6*)*

[this is the format for the Tender Security to be issued by a scheduled bank
of Bangladesh as stated under ITT Clauses 29 and 30]

Invitation for Tender No: Date:

Tender Package No:

Tender Lot No:
To:
[Name and address of Purchaser]

TENDER GUARANTEE NO:

We have been informed that *[insert name of Tenderer]* (hereinafter called "the Tenderer") intends to submit to you its Tender dated *[insert date of Tender]* (hereinafter called "the Tender") for the supply of *[description of goods and related services]* under the above Invitation for Tenders (hereinafter called "the IFT").

Furthermore, we understand that, according to your conditions, Tenders must be supported by a Bank Guarantee for Tender Security .

At the request of the Tenderer, we *[insert name of bank]* hereby irrevocably undertake to pay you, without cavil or argument, any sum or sums not exceeding in total an amount of Tk *[insert amount in figures and in words]* upon receipt by us of your first written demand accompanied by a written statement that the Tenderer is in breach of its obligation(s) under the Tender conditions, because the Tenderer:

    a.   has withdrawn its Tender after opening of Tenders but within the validity of the Tender Security ; or
    b.   refused to accept the Notification of Award (NOA) within the period as stated under Instructions to Tenderers (ITT) ; or
    c.   failed to furnish Performance Security within the period as stipulated in the NOA; or
    d.   refused to sign the Contract Agreement by the time specified in the NOA; or
    e.   did not accept the correction of the Tender price following the correction of the arithmetic errors in accordance with the ITT; or

This guarantee will expire:

    (a)   if the Tenderer is the successful Tenderer, upon our receipt of a copies of the contract signed by the Tenderer and the Performance Security issued to you in accordance with the ITT; or

    (b)   if the Tenderer is not the successful Tenderer, twenty eight (28) days after the expiration of the Tenderer's Tender validity period, being [*date of expiration of the Tender validity plus twenty eight(28) days]*

Consequently, we must receive at the above-mentioned office any demand for payment under this guarantee on or before that date.

Signature   Seal

(ii) Letter of Commitment for Bank's Undertaking for Line of Credit (Form PG4-6A)

*[This is the format for the Credit Line to be issued by anyinternationally reputable bank in accordance with **ITT Clause 26.1(d)]***

Memo No.:   Date:

Invitation for Tender No: Date:

Tender Package No:

Lot No (*when applicable*):
To:

[*Name and address of the Procuring Entity*]

CREDIT COMMITTMENT No: [*insert number*]

We have been informed that *[name of Tenderer]* (hereinafter called "the Tenderer") intends to submit to you its Tender (hereinafter called "the Tender") for the supply of Goods of *[description of Goods and related services]* under the above Invitation for Tenders (hereinafter called "the IFT").

Furthermore, we understand that, according to your conditions, the Tenderer's Financial Capacity i.e. Liquid Asset must be substantiated by a Letter of Commitment of Bank's Undertaking for Line of Credit.

At the request of, and arrangement with, the Tenderer, we *[name and address of the Bank]*do hereby agree and undertake that [*name and address of the Tenderer*] will be provided by us with a revolving line of credit, in case awarded the Contract, for the delivery of Goods and related services viz. [*insert name of supply*], for an amount not less than [*name of currency(s)*] [*Amountin figure*] (*in words*) for the sole purpose of the supply of Goods and related services under the above Contract.This Revolving Line of Credit will be maintained by us until issuance of "**Acceptance Certificate**" by the Procuring Entity.

In witness whereof, authorised representatives of the Bank have hereunto signed and sealed this Letter of Commitment.

Name and Signature   Name and Signature

Notification of Award (Form PG4 - 7)

Contract No: Date:
To:

[Name of Contractor]

This is to notify you that your Tender dated *[insert date]* for the supply of Goods and related Services for *[name of contract]* for the Contract Price of Tk *[state amount in figures and in words]* as corrected and modified in accordance with the Instructions to Tenderers, has been approved by *[name of Purchaser].*

You are thus requested to take following actions:

    i.   accept in writing the Notification of Award within seven (7) working days of its issuance pursuant to ITT Sub-Clause 62.3

    ii.   furnish a Performance Security in the specified format and in the amount of Tk *[state amount in figures and words]* ,within Twenty-eight (28) days from issue of this Notification of Award but not later than *(specify date),* in accordance with ITT Clause 64.2

    iii.   sign the Contract within twenty eight (28) days of issuance of this Notification of Award but not later than *(specify date),* in accordance with ITT Clause 67.2

You may proceed with the execution of the supply of Goods and related Services only upon completion of the above tasks. You may also please note that this Notification of Award shall constitute the formation of this Contract, which shall become binding upon you.

We attach the draft Contract and all other documents for your perusal and signature.

Signed

Duly authorised to sign for and on behalf
of *[name of Purchaser]*

Date:

Contract Agreement (Form PG4 - 8)

THIS AGREEMENT made the *[day]* day of *[month][year]* between *[name and address of Purchaser]* (hereinafter called "the Purchaser") of the one part and *[name and address of Supplier]* (hereinafter called "the Supplier") of the other part:

WHEREAS the Purchaser invited Tenders for certain goods and related services, viz, *[brief description of goods and related services]* and has accepted a Tender by the Supplier for the supply of those goods and related services in the sum of Taka *[Contract Price in figures and in words]* (hereinafter called "the Contract Price").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:
1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the General Conditions of Contract hereafter referred to.
2. The following documents forming the Contract shall be in the following order of precedence, namely:
    - (a) the signed Form of Contract Agreement;
    - (b) the Notification of Award
    - (c) The Tender and the appendices to the Tender
    - (d) Particular Conditions of Contract;
    - (e) General Conditions of Contract;
    - (f) Technical Specifications;
    - (g) Drawings;
    - (h) Price Schedules and Schedule of Requirements and;
    - (i) other document including correspondences listed in the PCC forming part of the Contract

3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the goods and related services and to remedy any defects therein in conformity in all respects with the provisions of the Contract.

4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the goods and related services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Bangladesh on the day, month and year first written above.

For the Purchaser: For the Supplier:

Signature

Print Name

Title

In the presence
of Name
Address

Bank Guarantee for Performance Security
(Form PG4 – 9)

*[This is the format for the Performance Security to be issued by **an internationally reputable bank and it shall have correspondent bank located in Bangladesh, to make it enforceable** in accordance with ITT Sub-Clause 64.1 pursuant to Rule 27(4) of the Public Procurement Rules, 2008.]*

Contract No: Date:

To:

[Name and address of Purchaser]

PERFORMANCE GUARANTEE No: *[insert Performance Guarantee number]*

We have been informed that *[name of supplier]* (hereinafter called "the Supplier") has undertaken, pursuant to Contract No *[reference number of Contract]* dated *[date of Contract]* (hereinafter called "the Contract") for the supply of *[description of goods and related services]* under the Contract.

Furthermore, we understand that, according to your conditions, Contracts must be supported by a performance guarantee.

At the request of the Supplier, we *[name of bank]* hereby irrevocably undertake to pay you, without cavil or argument, any sum or sums not exceeding in total an amount of Tk *[insert amount in figures and in words]* upon receipt by us of your first written demand accompanied by a written statement that the Supplier is in breach of its obligation(s) under the Contract conditions, without you needing to prove or show grounds or reasons for your demand of the sum specified therein.

This guarantee is valid until *[date of validity of guarantee]*, consequently, we must receive at the above-mentioned office any demand for payment under this guarantee on or before that date.

[Signatures of authorized representatives of the bank]

                                                            Seal

                    Signature

Bank Guarantee for Advance Payment (Form PG4 – 10)-N/A

*[this is the format for the Advance Payment Security to be issued by **an internationally reputable bank and it shall have correspondent bank located in Bangladesh, to make it enforceable** in accordance with GCC Clause 27.1]*

Contract No: Date:

To:

[Name and address of Purchaser]

ADVANCE PAYMENT GUARANTEE No:

We have been informed that *[name of supplier]* (hereinafter called "the Supplier") has undertaken, pursuant to Contract No *[reference number of Contract]* dated *[date of Contract]* (hereinafter called "the Contract") for the supply of *[description of goods and related services]* under the Contract.

Furthermore, we understand that, according to your Particular Conditions of Contract Clause 26.1, Advance Payment(s) on Contracts must be supported by a bank guarantee.

At the request of the Supplier, we *[name of bank]* hereby irrevocably undertake to pay you, without cavil or argument, any sum or sums not exceeding in total an amount of Tk *[insert amount in figures and in words]* upon receipt by us of your first written demand accompanied by a written statement that the Supplier is in breach of its obligation(s) under the Contract conditions, without you needing to prove or show grounds or reasons for your demand of the sum specified therein.

We further agree that no change, addition or other modification of the terms of the Contract to be performed, or of any of the Contract documents which may be made between the Purchaser and the Supplier, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee is valid until *[date of validity of guarantee]*, consequently, we must receive at the above-mentioned office any demand for payment under this guarantee on or before that date.

[Signatures of authorized representatives of the bank]

	Seal
Signature	

Deviation List (Form PG4 – 11)

[*If Tenderer has any reservation on terms and conditions, Tenderer has to mention his reservations in Deviation list*]

Sl. No.	Reference No./ Clause No.	Proposed Deviation	Remarks

[*Add rows if necessary*]

Signature: *[insert signature of authorised representative of the Tenderer]*

Name: *[insert full name of signatory]*

In the capacity of: *[insert designation of signatory]*

Duly authorised to sign the Tender for and on behalf of the Tenderer

Warranty   Certificate (Form PG4 - 12)

[*The Tenderer shall require to fill in this Form in accordance with the instructions indicated. This Certificate should be on the official pad of the Tenderer and should be signed by a person with the proper authority to sign documents.*]

[*The Tenderer shall include it in its Tender, if so indicated in the **TDS as stated under ITT SubClause21.1 (q)**]*

Invitation for Tender No:	Date:
Tender Package No:	
Tender Lot No(*when applicable*):	
To: [Name and address of Procuring Entity]	

WHEREAS

We *[insert complete name of Tenderer],*

who are authorized Supplier of *[insert type of goods to be Supplied],* having registered office at *[insert full address of Tenderer's registered office]* do hereby warrants that all the Goods [*insert name and brief description of the Goods*] will be supplied by us and extend our full guarantee and warranty as stated under GCC Clause 33 of the General Conditions of Contract with respect to the Goods offered by us under this contract.

Signed: *[insert signature(s) of authorized representative(s) of the Tenderer]*

Name: *[insert complete name(s) of authorized representative(s) of the Tenderer]*
Address: *[insert full address including Fax and e-mail]*
Title: *[insert title]*
Date: *[insert date of signing]*

Section 6. Schedule of Requirements

Invitation for Tender No: Date
Tender Package No:GRF-24

A. List of Goods and Delivery Schedule

When completing Form PG4-3A, 3B & 3C the Tenderer shall quote prices and contract delivery dates for each lot separately, as specified in the List of Goods and Delivery Schedule.

Item No.	Description of Item	Unit of Measurement	Quantity	Point of Delivery *[Final (Project Site) Destination as specified in TDS]*	Delivery Date Required (in weeks)	
					Earliest Delivery Date	Latest Delivery Date
1	**2**	**3**	**4**	**5**	**6**	**7**
1	Supply of Single Phase Solid State Smart Prepayment Meter with BPLC Module (As per Technical Specifications & GTP-Section:7)	Nos	55000	*Central Store, BPDB, Tongi, Gazipur.*		
	Purchaser's Option for delivery terms is:				Within 180 (one eighty) days counted from the date of the L/C opening.	
Lot No 1: *N/A*						
[add as many rows and details as there are individual items in the Lot]						
Lot No 2: *N/A*						
[add as many rows and details as there are individual items in the Lot]						

Note: This Section provides the List of Goods and Delivery Schedule and List of Related Services and Completion Schedule and must be carefully prepared by a Purchaser for each object of procurement
The Purchaser may include the delivery of a limited supply of fast-moving and/or hard-to-find spare parts in this Schedule of Requirement. This is to ensure the continued use or operation of the equipment.

B. List of Related Services and Completion Schedule

When completing Form PG4-3D, the Tenderer shall quote prices and Completion date for services for each item against each lot

Item No.	Description of Item	Unit of Measurement	Quantity	Place where Services shall be performed	Final Completion Date(s) of Services
1	2	3	4	5	6
1	Pre-Delivery Inspection And/or Witness Factory Acceptance Test(FAT) (as specified in Section-4: GCC 32.1-32.4)	Lot	LS		
Lot No 1: *[enter description]*					
[add as many rows and details as there are individual items in the Lot]					
Lot No 2: *[enter description]*					
[add as many rows and details as there are individual items in the Lot]					

Notes on Related Services

The Purchaser shall clearly specify the related services/Incidental services, other than inland transportation and other services required to convey the Goods to their final destination, in this Schedule of requirement. In particular, these services may refer to any of the following but not limited to:

(a)   performance or supervision of on-site assembly and/or start-up of the supplied Goods;

(b)   performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time as specified, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and

(c)   training of the Purchaser's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods

SECTION:7
TECHNICAL SPECIFICATION
AND
GUARANTEED TECHNICAL PARTICULARS

Specification for

Single Phase Smart Pre-Payment Energy Meter with Communication Module

7.1 Scope

Single Phase: This Technical Specification covers the Design, Manufacture, Testing and supply of Single phase whole current AC 5(60) Amps Smart Pre-payment Energy Meter of Accuracy Class 1.0.

The smart Pre-payment Meter should have plug & play type BPLC communication module (Meter able to support 4G GPRS). The meter communication module should restart itself at a programmable timestamp without power interruption. The meter should be able to connect point to point communication with head end system (HES).

The Smart Pre-payment features like SMS/Apps recharge, tariff and charge configuration, emergency credit/ friendly hour configuration, daily and monthly billing data collection, on demand read etc to be implemented through HES.

The meter must be able to detect and record power off & power on, tamper, load control, configuration, tariff setting, firmware update and payment related event with date and time stamp. Meter can push the related event to HES when the event occur, such low credit alarm, no credit disconnect, emergency in use or friendly in use, tamper. Utility and customer can received the related SMS notification as per the configuration.

7.2 Scope of Supply

The tenderer shall be responsible for supply of Energy Meter with related services packing, loading, shipment, custom clearance if necessary, and transportation, insurance and unloading at site. The supplied meters will be operated by existing purchasers' software (API attached in part-2 of this TD). Interfacing of the offered meter is the responsibility of the tenderer.

Item No.	Name of Goods or Related Services	Description	Unit of Measurement	Quantity
1	Single Phase Solid State Smart Pre-payment meter with BPLC Communication Module.	Single phase, 230 Volt, 5(60)A	Nos.	55,000

Meter will be run as Conventional Pre-payment mode with BPDB unified system.

7.3 Service conditions:

The meters to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions. Meters should be capable of maintaining required accuracy under hot, tropical and dusty climatic conditions.

Sl.No.	Condition	Specification
1	Maximum ambient temperature (^{o}C)	50
2	Minimum ambient temperature (^{o}C)	5
3	Maximum daily average temperature (^{o}C)	35
4	Maximum annual average temperature (^{o}C)	30
5	Mean annual rainfall (mm)	2500
6	Minimum annual rainfall (mm)	1461
7	Maximum annual rainfall (mm)	4127
8	Maximum relative humidity (%)	100
9	Average relative humidity (%)	80
10	Maximum wind velocity (km/h)	180
11	Maximum altitude above mean sea level (meters)	200

7.4 Standards and codes of practice

All material and equipment supplied and all works carried out shall comply in every respect with the technical codes of the International Organization for Standardization (ISO) and with the recommendations of the International Electro technical Commission (IEC), which apply to the electrical equipment.

Goods and special guarantees beyond the scope of ISO and IEC shall conform at least to one of the following standards and codes.

IEC 62052-11	Electricity metering equipment (AC)- General requirements, tests and test Conditions- Part 11: Metering equipment
IEC 62055	Part 21: Framework for standardization Part 31: Particular requirements-Static payment meters for active energy (classes 1)
IEC 62053-21, IEC 62053-23	Alternating current static watt-hour meters (classes 1)
IEC62052-21, IEC 62054-21	Time switches for tariff and load control
IEC 62056-21	Data exchange for meter reading, tariff and load control and direct local data exchange
IEC 1038	The switches for tariff and load control
IEC 1107	Data exchange for meter reading, tariff and load control and direct local data exchange
IEC 58	Shock and vibration, humidity, solar radiation and salt mist etc.
ISO 9001	Code of practice for quality systems part 1: Model for quality assurance in design/development, production, installation and servicing.
IEC 62054	Real Time Clock (RTC)
Others	All other relevant IEC specifications for metering equipment.

7.5 Supply System

Description	Single Phase
Rated voltage (Vref.)	230 V – Phase to Neutral
Rated Current	Basic Current 5 Amps (lb), Maximum Current 60 Amps (lmax)
Rated Frequency	50 Hz

7.6   Specific Technical Requirements

The meters to be supplied against this specification shall meet the requirements specified in this clause.

7.6.1 Electrical requirements

Meter supplied shall meet the following electrical requirements.

Sl.No	Description	Specification
A	**Phase**	**Single Phase**
1	Connection	1-Phase, 2-Wire, direct connected (unidirectional)
2	Number of element	02 (two)
3	Rated voltage	230 V phase to neutral.
4	Rated Current : a) Base current, I_b b) Maximum continuous current, I_{max}	≤ 5 A ≥ 60 A; Moreover the 5-60 Amps meter shall work accurately up to 120 %

Sl.No	Description	Specification
		of Imax i.e.; 72 Amps.
5	Starting current	20 mA (0.4% I_b)
6	Power consumption in the voltage circuit	$\leq$ 2 Watts and 5 VA
7	Limit of Current	Shall be Programmable within the range of 0.02A to 60 A
8	Continuous over voltage	Should withstand 400 volts for 48 hours without causing any damage or degrading of its operating life, or causing changes of more than 0.01 kWh in its credit registers (excluding the possible decrement of credit due to power being consumed).
9	Variation in voltage	+30% to –30%; The meter shall be suitable for working satisfactorily within the specified range.
10	Rated frequency	50 Hz
11	Variation in frequency	± 2%
12	Power factor	The Meter shall be suitable for working satisfactorily from 0.5 lag – unity – 0.8 lead
13	Class index	1.0; The accuracy shall not drift with time.
14	Keypad	12-key, International Standard layout including "information" and "backspace" keys
15	Clock	Built-in real time clock with 10 years battery backup. Without support of external battery and AC power, meter should operate at least 01 (one) hour with the support of built-in super-capacitor.
16	a) Display	LCD; Visibility should be sufficient to read the meter mounted at height of 0.5 to 2.0 m. Pin type; trans-reflective HTN or STN type industrial grade; temperature range -20^0C to $+70^0C$
	b) Period of display	Continuous
	c) Digits	WxH: 6 mm x 10 mm (minimum)
	d) Maximum viewing angle	160 degrees
	e) Number of display digits	5+1
17	Harmonic energy	Meter shall record total energy including harmonic energy
18	Memory	Non-volatile memory that retain information up to 10 years in the absence of power. Described in section 7.7 & 7.16.7.3. The data stored in memory chip can be read by a tool when the meter is broken after demonstration.
19	Power limiting	Meter shall disconnect the load when a pre-programmed threshold power is reached. The threshold shall be programmable in steps of 500W or less.
20	Tamper detection	Sensor to detect any kind of tamper
21	Load disconnection	Latching relay
22	Audible alarm	Buzzer
23	Lightning Protection	In accordance to IEC 62053-21 or latest version of IEC
24	Communication	Plug & Play BROADBAND PLC (Meter able to support 4G GPRS).
25	Application Protocol	DLMS/COSEM and IDIS
26	Installation of Communication Module	Adding or exchanging the communication module should be done without turning off the meter. Meter must be compatible with multi communication module support, BPDB can replace BPLC module with

Sl.No	Description	Specification
		RF or GPRS module in the same meter if required.
27	Maximum pulse frequency	Shall not exceed 2.5 kHz
28	Sealing Condition	Hermetically Sealed/ Fully Ultrasonic Welded with Mechanical Interlocking to avoid unauthorized opening of meter cover without breaking and damaging.

7.6.2 Mechanical requirements:

The enclosure shall be tamper resistant and shall be suitable for indoor mounting. The meter shall be such that the internal components in the active part of the meter shall be protected against unintentional damage or tamper during handling and installation.

Furthermore, Meter supplied shall meet the following mechanical requirements.

Sl. No.	Description	Specification
1	Meter Case	The meter shall be constructed by employing flame retardant and high impact strength material. The base, body and frame including terminal block shall be of heat resistive; shock proof and rust proof good quality hard material e.g. unbreakable engineering or stamped metal or molded phenol resin which shall be capable of withstanding of 145° C. The base will be provided with 3 (three) screw mounting holes, 1 (one) slotted meter support bracket at the top and 1 (one) round hole on each side in the bottom half of the base for securely mounting the meter to the meter board. The meter cover shall be of molded transparent Poly-Carbonate. The meter cover shall be provided with a window of transparent Poly-Carbonate or toughened glass. For display of LCD display. The base cover should be transparent. The meter shall be effectively sealed to prevent entrance of moisture, rain and dust into its internal parts.
2	Terminal	a) Terminal block shall be polycarbonate grade 500R or equivalent bakelite; brass or copper current terminals; two flat-head brass screws at each terminal; b) Terminal cover should have provision for sealing. c) Terminal cover should have provision for Side entry connection. d) Minimum free space between bottom of terminal and terminal cover are 60 mm e) **For Single Phase:** Minimum 4 terminals to accommodate 10 mm² duplex; terminal cover shall be extended type; terminal bore diameter 6 mm;
3	Connections diagrams and terminal marking	Every meter shall be indelibly marked with a diagram of connection. Meter terminals shall be marked, this marking shall appear on the diagram Stickers of any kind shall not be accepted.
4	Insulation level	Shall withstand a power frequency test of 4kV and impulse withstand test of 6 kV.
5	Protection against penetration of dust and water	Conform to the degree of protection of IP54 or better
6	Top cover sealing	Hermetically Sealed/ Fully Ultrasonic Welded with Mechanical Interlocking to avoid unauthorized opening of meter cover without breaking and damaging.
7	Pulse output	The meter shall be provided with flashing red LED to represent the pulse output for testing the meter by suitable testing equipment. The operation indicator must be visible from the front.

Sl. No.	Description	Specification
8	Protection against magnetic field	The Meter Accuracy shall not be affected by AC/DC magnetic field from all sides of the meter i.e.; front, sides, top and bottom of the meter. Meter shall not be affected by permanent magnet of 0.5 mT.
9	Temperature range	Limit range of operation: -25^0C to 55^0C Limit range of storage and transport: -25^0C to 70^0C
10	Name plate	Every meter shall have clearly visible, effectively secured against removal and indelibly and distinctly marked. The following information's marked on name plate : i) Manufacturer's name and year of manufacture, ii) Meter type iii) Number of phases and number of wire iv) Meter serial number v) Rated voltage vi) Basic current and maximum current vii) Reference frequency in hertz viii) Meter constant in imp/kWh& imp/kVarh ix) Class index of the meter x) Over-current breaking capacity (in kA) xi) UTILITY logo (when supply) xii) Contract No. (When supply) xiii) Reference Standard
11	Optical Port & RS485 port	Meter should have standard optical port for local read and configuration. Meter should have active RS485 port for remote communication.

7.6.3 Latching relay specifications

The latching relay shall be from Gruner, Germany/Jonson Electric, Germany/KG USA compatible with the offered meter. Technical specification of the relay shall be engraved or marked on the body of the relay.

The specification for the latching relay is as follows:

Sl. No	Description	Requirements
		Single Phase
1	Manufacturers Name &Country of origin	To be mentioned
2	Country of Manufacturing	To be mentioned
3	No. of Latching relay	02 (Two) in phase &Neutral or Integrated both phase & neutral
4	No. of coils	2 (two)
5	Rated coil voltage	12 VDC
6	Rated coil power	6 W
7	Pulse to set	30 ms
8	Contact Material	Silver alloy
9	Maximum Switching Power	15000 VA
10	Maximum Switching Voltage	250 V AC
11	Maximum Switching Current (rms)	80A
12	Contact resistance	≤ 2 mΩ
13	Electrical Cycle	1×10^4
14	Mechanical Cycle	1×10^5

Sl. No	Description	Requirements
		Single Phase
15	Insulation resistance	≥ 1000 MΩ
16	Dielectric Strength between contacts	≥ 2000 VAC
17	Dielectric Strength between contact and coil (50 Hz)	≥ 3000 VAC
18	Dielectric Strength between contacts assembly	≥ 4000 VAC
19	Ambient temperature	-40 °C ~ +55°C
20	Operating humidity	40 to 90%
21	Temperature rise at rated current (assuming 30^{0}C room temp.)	60^{0}C

7.7 MEASURED & STORED PARAMETERS:

i) Parameters to be Measured

Sl. No	Description	Requirements
		Single Phase
1	**Instantaneous:**	Voltage (V); Current (I); Cumulative-Active Energy Kwh ; Current Demand(kW); Power factor.
2	**Billing parameters** The billing parameters shall be retained in the meter for at least 12(Twelve) months. :	Previous month's MD in kW and Cumulative-Active Energy Kwh; Consumption Active Energy (Kwh) in current month; Remaining balance; Money recharge and used in current month;
3	**Time of Use**	-

ii) Power Quality information

Logging of quality of supply events like power on/off, over/under voltage, over current (minimum 100 events). Setting of Under/Over Voltage and over current shall be configurable.

iii) Maximum Demand

Should have Maximum Demand registers kW with integration period of 30 minutes. Resets should be auto monthly or through communication command from HES / HHU.

iv) Load Survey Storage

Meter shall record load survey of minimum 365 days for average voltage, average current, average PF, for all phases, kWh reading and kvarh reading, kVAh reading, average demand in kW with integration period of 30 minutes. It shall be possible to select either demand or energy view at the system end.

v) Tamper/Event recording

A total of last 100 events considering all tampers defined must be detected and logged as tamper events on first in first out basis along with date & time. Meter shall log following Tampers/Events – Over voltage, Low voltage, Over current, Magnet tamper, Neutral missing, Top cover open, Terminal cover open etc.

7.8 Data display facility (manual/auto):

All the above parameters shall be displayed for minimum 5 seconds (configurable) including LCD check & all parameters are configurable. Data Display shall have following modes

a) **Auto Scroll:** All the following parameters shall be available in auto scrolling mode with OBIS Code.

- Date (DD:MM:YY) & Time (HH:MM:SS)
- Meter Serial Number
- Balance Amount (Tk.)
- Cumulative Forwarded Active Energy (Kwh)
- Current month Active MD
- Instantaneous voltage (V)
- Instantaneous phase current (A)
- Instantaneous Neutral current (A)
- Instantaneous Active power(KW)
- Last Recharge Date & Time
- The current Tariff rate

b) Scroll with Push-button:It shall be possible to display the following parameters in sequence through push-button provided on the meter with OBIS Code:

- LCD All Segment Display
- Date (DD:MM:YY) & Time (HH:MM:SS)
- Meter Serial Number
- Balance Amount (Tk.)
- Cumulative Forwarded Active Energy (Kwh)
- Instantaneous voltage (V)
- Instantaneous phase current (A)
- Instantaneous Neutral current(A)
- Instantaneous Active power (KW)
- Current Month Forwarded Active MD
- Cumulative Forwarded Active Energy of Last Bill
- Forwarded Active MD of Last Month
- Date & Time of Last Month MD
- Last recharge amount (Tk)
- Last Recharge Date & Time
- Error Code for communication problem diagnosis
- Latest Sequence number of token.

7.9 Tamper detection

a) A tamper sensor shall be provided to detect that terminal cover has been opened both in power supply and without power supply.

b) Tamper shall be detected with and without power supply. When the meter detects a tamper condition, it should enter a shutdown state, with an appropriate message. The customer should be disconnected immediately.

c) Meter should not power up /work in missing neutral connection (relay should open).

d) Removal of battery shall be considered as a temper.

e) Meter should run in normal operation in case of communication module fault.

In case of Magnetic effect, Neutral disturbance, Terminal cover open and any other tamper detection, relays should get disconnected immediately which can be reconnected through HES or through token.Meter must be capable of detecting multiple tamper.

The tamper status shall be reset by using a uniquely coded tamper reset token that may only be used once.

The meter should be able to count energy in any type of connection as long as the credit remains. Whenever the credit is zero, the relay should trip except for emergency or friendly hour. Otherwise, the tender will be rejected.

7.10 Indication on display:

a) Status of Relay-indication of status of relay i.e. Connected/Disconnected should be available on display.

b) Power Supply Status: visible indication of the status of the incoming supply i.e. Power supply On/Off.

c) Low Credit indication.

d) Credit Status.

e) Voltage indication.

f) Tamper Indication

g) Network Status

7.11 Display Unit/LCD:

a) The measured value(s), status, alarm, event information etc. Should be displayed on a Liquid Crystal display (LCD) register.

b) The display should have backlit capability for easy reading.

c) An illuminated display with a minimum lifetime of ten years is required.

d) The size (number of rows and characters per row) should be appropriate for the display and interpretation of the messages and meter information, and should be legible from a distance of at least 500 cm with a viewing angle no less than 30°.

7.12 Memory/Data Retention:

The data should be stored in non-volatile memory (NVM). The non-volatile memory should retain data for a period of not less than 10 years under un-powered condition. **The memory should record billing history and load profile data for last one year.**

7.18

Optical Interface

The meter shall have an IEC 62056-21 compliant optical communication port. This should allow the utility to access via front for variety of customer information stored inside the meter and to upload it into a hand held unit (HHU).

7.14 Electromagnetic compatibility

(a) Immunity to electromagnetic disturbance

The meter shall be designed in such a way that conducted or radiated electromagnetic disturbances as well as electrostatic discharge do not damage or substantially influence the meter. The disturbances to be considered are:

i.   Electrostatic discharges
ii.   Electromagnetic HF field
iii. Fast transient burst

(b) Radio interference suppression

The meters shall not generate conducted or radiated noise which could interfere with other equipment.

7.15 Accuracy requirements

(a) Limits of error due to variation of the current

The percentage errors shall not exceed the limits for the relevant accuracy class stipulated in IEC standard.

(b) Limits of error due to other influence quantities

The additional percentage error due to the change of influence quantities shall not exceed the limit for the reference accuracy class stipulated in IEC standard.

(c) Limits of error due to ambient temperature variation

The limits of error shall not exceed the limits stipulated in IEC standard.

(d) Starting and running with no-load

Initial start-up of the meter: The meter shall be fully functional within 5 seconds after the voltage is applied to the meter terminals.

Running with no load: When the voltage is applied with no current flowing in the current circuit the test output of the meter shall not produce more than one pulse.

Starting: The meter shall start and continue to register at a) single phase: $0.4I_b$% at power factor of 1.

(e) Meter constant

The relation between the test output and the indication in the display shall comply with the marking on the name-plate.

7.16 Functional Requirement

7.16.1 Security

All credit and meter management tokens shall be meter specifically encrypted to guarantee security of the system. Encrypted tokens shall not be reusable. Tokens to display status and test the meter may be un-encrypted and reusable.

7.16.2 Token validation

If a token not meant for the meter is applied, the meter should display a message to that effect. Similarly, if a valid token is re-entered into the meter then the meter must display an appropriate message.

7.16.3 Meter personalization

In addition to factory personalization and personalization via encrypted tokens, it shall be possible to personalize the meter from a hand held unit (HHU) provided the HHU is authorized/ programmed to communicate with the meter.

7.16.4 Meter modes

The meter shall be required to support at least three modes of operation, namely the Pre-payment mode, post-payment mode and the meter test mode.

7.16.5 Pre-payment mode

The basis of this mode is that credit is transferred to the meter, and provided the meter remains in credit, the meter provides supply. The credit register is decremented against current consumption with the countdown total being displayed on the meter display.

7.16.6 Meter test mode

The meter should support a test mode that is activated either from a dedicated test token, or using the HHU. This test should be automated in the meter and should include a full diagnostic test, testing

of the all the active and inactive functionality, metering accuracy test (1 minute load test), and connection validation tests. Meter test mode shall also display following information:

      i)   Meters software version
      ii)   Current limit
      iii)   Switch open and close count
      iv)   Token acceptance & rejection count

7.16.7 Energy accounting

7.16.7.1 Credit register

The credit register is the "operating account" of the meter being decremented by the metering process. The specific requirements of this register are:

a) This register must be decremented for the equivalent of every credit unit consumed.

b) When the available credit has been consumed, the meter must open the contactor and isolate supply from the customer (unless the Friendly hours or Emergency Credit option is invoked).

c) This register can become negative only from use of emergency credit/friendly hour.

7.16.7.2 Consumption during current billing period

a) This register records the cumulative energy consumption for the current billing period.
b) The registers shall be updated at least every 10 Wh.

7.16.7.3 Historic consumption

For this option there are six energy registers that store the total energy consumed for the previous six months.

a) These registers are cycled at during the month-end process, with the oldest data being deleted.

7.16.7.4 Cumulative energy consumption

a) This register records the cumulative consumption since the meter was commissioned.

b) The units of storage are kWh, rounded to two decimal points (10 Wh).

7.16.7.5 *Billing*

Billing operates on a monthly basis. Energy consumption charge is deducted within the meter for at least every 10 Wh. All other charges including demand charge, meter rent, vat etc are deducted as per prevailing rules of Bangladesh Energy Regulatory Commission (BERC) at the POS.

7.16.7.6 Month-end calculation

At the end of each month, the meter should perform a month-end calculation that consists of the following minimum steps:

a) The cumulative monthly energy registers must be reset, and the historic registers must be updated.

b) The meter must determine whether a new tariff will become active, and if so, must delete the old tariff.

7.16.7.7 *Date and time management*

a) The meter shall be equipped with a real time clock supporting the date and time as per IEC standard. Pseudo-clock using mains crossing detection is not acceptable. The maximum drift of the clock shall be less than 30 seconds per month. The battery and/or auxiliary power source shall operate maintenance free for a period of at least 10 years.

b) The meter must be equipped with a battery monitoring system that monitors the battery's condition and initiates a "Change Battery Alarm" to the point of sale when the battery

approaches the end of its operating life. If the battery is not replaced, the failure of the battery is deemed to constitute a meter failure, and the meter should be shut down.

7.16.8 Tariff Management

7.16.8.1 Tariff

All tariff calculation must be done within the meter.

The meter is required to support stepped tariffs structures as well as time-of-use and maximum demand.

The tariff structure consists of the following records:

i)   Each tariff must be uniquely identified using the tariff code
ii) Each tariff shall have an activation date, being the date on which the tariff becomes effective.
iii) Each tariff has up to seven steps (in kWh) for different levels of energy pricing.
iv) The rate describes the cost per kWh for energy consumption in that step.

7.16.8.2 Tariff management in the meter

a)   Tariffs shall be entered into the meter via the two-way token or HHU. The meter should not allow tariffs to be manually entered using the push buttons.
  • When the meter is active, the current cannot be overwritten.
  • The meter must time and date stamp when the tariff is loaded into meter.
b)   In general, when a tariff has expired in the meter, the tariff is automatically deleted by the meter.

7.16.8.3 Tariff security and verification

The meter shall write the active tariff code to the token on each insertion.

7.16.8.4 Tariff switchover

When the meter detects that a new tariff is applicable (using the tariff activation date), the meter should execute the following steps:

i)   The meter shall begin the billing against the new tariff.
ii) The current tariff code shall be updated to reflect the new tariff code.
iii) The old (expired) tariff should be deleted.
iv) New tariffs will only be activated at 00:00 Hr on the assigned day of a month.
v)   New tariff activation will not reset current tariff step.

7.17 Status/Event displays

In addition to the displays required above the meter must display the following minimum information in an intuitive way such that an inexperienced user can understand and interpret the information intelligibly. Laminated instruction cards are to be provided for each unit.

i)   Meter ID.
ii)   Out of Credit message
iii) Invalid token entered
iv)   Duplicate token entered
v)   Meter tamper state
vi)   Meter failure and/or fault code

7.18 Friendly:

The meter shall accommodate the "Friendly hours" features. These are time periods during which the meter shall not cut-off power to consumer if the credit becomes negative. Details of the features are described in the following table. All options should be allowed for one time in each vending.

Sl. No.	Requirement	Description
1	Friendly hours	There shall be provision to define 'Friendly hours' in the meter. The utility shall be able to define the 'Friendly hours' and shall be communicated to the meter through token.
2	Special facility	After finishing the weekend at 00:00 hour, meter can avail "Special" facility till 10:00am.

7.19 Emergency credit:

Provision shall be made in the meter for an Emergency Credit facility that allows the customer to draw on an emergency credit should the credit in the register be consumed.

The specific requirements of this facility are:

a) When the credit register value reaches a programmable Emergency Credit Threshold the meter should sound an audible alarm, and prompt the user to accept the use of the Emergency Credit facility (card insertion or button depression). The meter should not supply energy against emergency credit unless acknowledged by the customer.

b) If all the available credit in the credit register is expired and power disconnected, the facility to activate the Emergency Credit should remain an option to the user.

c) The meter should remain in service until the Emergency Credit Limit has been reached, after which the supply should be disconnected.

d) If the Emergency credit limit is set to zero, the Emergency Credit Threshold shall function as a low credit warning and provide the user with a visual and audible alarm that credit is low. The user shall have the option to silence the alarm by inserting a card or pressing a button to accept the alarm.

e) If emergency credit has been previously consumed, then the value of emergency credit used shall be deducted from the next recharge token inserted into the meter. Meter should not be ON until full loan amount is paid back and balance becomes positive.

f) Once emergency credit has been fully exhausted, no further credit facilities shall be available until the full emergency credit allocation has been paid for and credit balance becomes positive.

g) In case of negative credit status, meter should not accept balance clear token.

7.20 Load Control

Meters shall have the options to control loads with the following features:

a) There shall be provision in the meter to define the allowable loads for given time periods within a day.

b) There shall be provision in the meter to accommodate the date of activation of the defined load allocation,

c) Load limit shall be defined in step of 500 W.

d) Single phase Smart meter shall be equipped with integrated/ separate load control switches (latching relay) at both phase and neutral to control flow of electricity to the load at the instance of connect/ disconnect commands as per functional need of the system. Both Load switches (latching relay) shall operate simultaneously for connect/ disconnect purpose and shall be mounted inside the meter with suitable arrangement.

e) The meter should be able to count energy in any type of connection as long as the credit remains. Whenever the credit is zero, the relay should trip except for emergency or friendly hour. Otherwise, the tender will be rejected.

f) The rating of switches used shall be as per IEC.

g) The three-phase meter should not trip irrespective of unbalanced power in different phases.

7.21 Load Disconnection/Reconnection:

    a)   The load shall be disconnected by a latching relay under the following conditions:

        i) The credit in the meter has expired and grace facilities also expired.

        ii) The load power threshold has been exceeded.

        iii) The meter is in a tampered state.

        iv) Neutral missing at source side.

    b)   The meter shall indicate whether the load is connected or not and shall display the reason for disconnection.

    c)   The customer shall not have the option to switch the contactor manually. Under over – current conditions the mechanism to automatically reconnect the load must ensure that the number of switching cycles is limited. The meter shall attempt to reconnect the load up to 5 times at 30-second intervals. If the over-current condition still exits the meter shall wait a period of 30 minutes before attempting to reconnect the load.

    d)   After the load is disconnected by a latching relay, all the circuits should remain disconnected even if the phase and neutral connections are shifted to each other

    e)   After load is disconnected by a latching relay, all circuits should remain disconnected and there will be no possibility of being circuited through a local earth either in phase or in neutral terminal as partially or fully.

7.22 Smart Pre-Payment Features

7.22.1 Balance calculation:

Balance calculation will be implemented at pre-payment meter as per energy consumption. HES will collect the billing data on the midnight of every day.

7.22.2 Friendly Hours:

Friendly Hours list shall be configurable on HES & during this period no disconnection shall be done from HES side.

The utility shall be able to define the **Friendly Hours** and shall be communicated to the meter through HES. The meter shall accommodate the "**Friendly Hours**" features. These are time periods during which the meter shall not cut-off power to consumer if the credit becomes negative.

7.22.3 Emergency credit :

Provision shall be made in the meter for an Emergency Credit facility that allows the customer to draw on an emergency credit should the credit in the register be consumed. Emergency Credit facility shall be configurable on HES & during this period no disconnection shall be done from HES side.

7.22.4 Load Control

Meter shall support relay connection/disconnection in following conditions:
- Over Current
- Load control limit (Load Control limits shall be remotely programmable).
- Disconnect signal from Utility Control Centre

7.22.5 Load Disconnection/Reconnection:
    i) Load disconnection –

a) If meter credit is exhausted, then meter should disconnect immediately. At any reason if authority wants to disconnect the load of the meter, Disconnection shall be done from HES.

b) On defined tamper/event condition meter will disconnect the load.

ii) Load Reconnection-

a) Reconnection mechanism under disconnection from utility control center: Reconnection shall normally be done from HES.

7.22.6 Low Credit indication & alarm:

When balance is less than defined value in meter, the meter could trigger one alarm and push to HES .

7.22.7 E- Recharge /Vending -

a) The Vending system shall be "Web & Mobile Apps based System" for online recharge. After online recharge, meter should get credited immediately and automatically and customer should receive recharge successful SMS for notification. If meter doesn't get credit over, Vending system should send SMS to inform customer visit the nearest vending station to ask process.

b) Customer should receive SMS notification like low credit, zero balance, negative balance, recharge successful, recharge failed, Emergency in use, friendly in use, load disconnect.

7.22.8 Account Log-off

a) The meter should have a provision for account log-off.

b) To log-off the meter, it should accept one termination code generated by the system.

c) The meter shall generate a return code with remaining credit.

d) The return code should be read by pressing one short code and also through online.

e) After accepting the termination code, meter shall be decommissioned. Once decommissioned, the meter should not run on previous setting.

7.23 *Meter identification cards*

a) In case of keypad meters, for each meter shall be supplied with a meter identification card, which complies with NRS 009-4: 1995.

b) The printed details and graphic design of the cards shall be submitted prior to producing the cards.

7.24 *Testing and approval*

a) It will be the responsibility of the tenderer to submit to the Employers representative for approval a complete Acceptance Test Procedure (ATP) for system verification.

b) Once the Employer's representatives approve the ATP, the testing and performance validation tests on 2% (random samples) of the supplied meters will commence. The Employer's representative at the utility's premises will witness these tests.

7.25 Quality assurance

Tenderers shall comply with and be certified to the following ISO levels:

ISO 9001 Quality systems

Model for quality assurance in design development production installation and servicing

Model for quality assurance in final inspection and test

Tenderers shall submit copies of certification with their proposal to this effect.

7.26. *Keypad Numbering Scheme*

The meter number scheme will be the unique and be followed by a convention of all the utilities. The number scheme will not be the scheme described but the description will be the basic of the convention of the meter number scheme which will be supplied after sinning of the contract

While the manufacturer is free to use any number scheme they see fit, the number scheme must be secure and use minimum number of digits and must always contain the following fields in encrypted form:

Meter ID

Recharged amount

Sanctioned Load

Sequence Number

The meter must check the validity of these fields before recharging the credit. The sequence number is an auto generated number starting from 1 for each recharge or keypad numbers. A keypad number will only be accepted if the previous number has been keyed in. For example if a consumer goes to POS to recharge 300Tk and gets keycodexxxyyyzzz (which contains sequence number n). The next month he goes again to recharge 250Tk and gets keycodepppqqqrrr (which contains sequence number n+1). Keycode pppqqqrrr will only be accepted if xxxyyyzzz has been keyed in previously i.e. meter will only accept a keycode containing sequence number 'n' if at some point keycode containing sequence number 'n-1' has been keyed in. This is to ensure that keycodes are not discarded by a consumer intentionally.

Periodically it may be necessary to generate a keycode that contains more data. The keycode scheme must be able to accommodate the following data if and when required:

Meter ID
Recharged amount
Sanctioned Load
Sequence Number
Load Change

- Sanctioned Load
- Start Time

Rate

- Start Unit
- Peak Rate
- Off peak Rate
- Activation Date

It is assumed that the keypad number with only the meter id, amount, load and sequence number will be a lot shorter that the keycode containing all the rate information.

7.27 *Meter Connection Procedure*

After meter install in the field, it is mandatory to register meter in the vending system. The register operation will make system communicate with meter and confirm the communication ability.

7.28 Meter Numbering

It must be possible to program the meter with 12 digit meter number.

7.29 Tariff Management

7.29.1 Tariff Definition

The System Manager shall be able to define tariff objects. Each tariff has a unique tariff ID associated with it. The following information is required to define a tariff.

Tariff ID	A unique tariff identifier
Effective Date	The date on which the tariff will be effective.

Tariff and all charges will be effective as per direction of Bangladesh Energy Regulatory Commission (BERC).

Present Tariff Structure and other charges

LT (Low Tension) : i) Single Phase : 230 Volt, 0-7.5 KW & ii) Three Phase : 400 Volt, 0-50 KW

1. LT-A : Residential

Step Structure	Step	Energy Rate/Charge (Tk./Kwh)
Life line	0-50 kWh	$R_0 = 4.63$
1st Step	0-75 kWh	$R_1 = 5.26$
2nd Step	76-200 kWh	$R_2 = 7.20$
3rd Step	201-300 kWh	$R_3 = 7.59$
4th Step	301-400 kWh	$R_4 = 8.02$
5th Step	401-600 kWh	$R_5 = 12.67$
6th Step	600+ kWh	$R_6 = 14.61$

	Consumer Class	ToU	Energy Rate/Charge (Tk./Kwh)
2	LT-B: Agriculture Pump		$R_0 = 5.25$
3	LT-C1: Small Industries	Flat Off-peak Peak	$R_0 = 10.76$ $R_1 = 9.68$ $R_2 = 12.95$
4	LT-C2: Construction		$R_0 = 15.15$
5	LT-D1: Education, Religious & Charitable and Hospital		$R_0 = 7.55$
6	LT-D2: Street Light, Water Pump		$R_0 = 9.71$
7	LT-D3: Battery Charging Station	Flat Off-peak Supper Off-peak Peak	$R_0 = 9.62$ $R_1 = 8.66$ $R_2 = 7.68$ $R3 = 12.14$
8	LT-E: Commercial & Office	Flat Off-peak Peak	$R_0 = 13.01$ $R_1 = 11.71$ $R_2 = 15.62$
9	LT-T: Temporary		$R_0 = 20.17$

Subject	Tariff Category	PFC Calculation
Power Factor Correction (PFC) Charges	LT-A,B, C1, D1& E' Category,3-Phase, 400V, 20KW & above LT- C2 & D2 (Only Pump)' Category, 3-Phase, 400V	* PF Maintain in 0.95 to 1.00. * Power Factor (PF) obtained from meter. * Monthly average PF less than 0.95 then- From 0.95 to 0.75 for every 0.01 step less surcharge will impose 0.75% of energy bill.

Subject	Tariff Category	Time
Time of Use	LT-C1& E Category	Peak – 17:00 to 23:00 Off Peak-23:00 to 17:00 Flat-24 hours
	LT-D3 Category	Peak – 17:00 to 23:00 Off Peak-23:00 to 05:00 and 09:00 to 17:00 Supper Off Peak-05:00 to 09:00 Flat-24 hours

Meter Rent	A fixed charge is levied per month.
Sanctioned Demand Charges (Fixed Charge)	A fixed charge per kW of the sanctioned demand is levied per month.
Maximum Demand Charges	Integrated over ½ hourly periods Maximum Demand in KW.
VAT	Value added tax is levied on electricity charges and must be catered for in the system.

a) The tariff code, effective date, kWh_x (in units of kWh), R_x together with a fixed monthly service charge Service Charges and a fixed monthly sanctioned demand shall be used to define all Pre-payment tariffs used in the system.

b) The MIC shall make provision for up to 500 tariff definitions.

c) The MIC must verify the tariff data entered and shall not allow discontinuities in the energy levels or negative rates for energy and fixed charges.

d) There shall be a facility to copy tariffs to new tariff codes for editing purposes. The edit facility shall include a mechanism to increase the values of any of the variables R_x, SC and DC by a fixed percentage.

e) Tables of Supply Group Codes and tariffs shall be securely stored at the MIC.

f) No penalty Charges for Power Factor above 0.95 to 1.0. Power Factor Correction Charge is computed as above and average power factor is measured by meter based on only reactive energy. The monthly average power factor from meter is used for the factor and applied on the monthly consumption.

7.29.2 Tariff Algorithm

The Pre-payment system could be implemented stepped tariffs. The tariffs will be implemented at the vending equipment/meter. The algorithm must ensure that:

a) The Stepped tariffs are implemented in meter as accurately as is the case for conventionally bitted customers.

b) Customers are not restricted to the amount and frequency of electricity token purchases.

c) The updated tariff with effective date will be sent using special numbers for keypad meters. After utility decides the tariff update, all purchase of credit (with keypad number) will carry tariff change flag.

d) Customers will purchase only following credit transfer principles.

e) For consecutive purchase in the same month, credit values without any fixed charge will be sent to the meter.

f) Slab reset service charges, power factor penalty (PFC) should be monthly basis.

g) The tender shall provide a detailed description of the algorithm including:

1. All assumptions made.

2. An explanation of how the averaging algorithm operates.

3. Examples of how the algorithm works.

4. Examples of how to explain the algorithm to customers.

5. Examples of how to deal with customers queries.

6. Description of how the algorithm manages tariff rate and tariff structure change.

7. Description to apply corrections

8. Description to mechanisms to how to deal with the situation where a customer buys at two different locations between data transfers.

9. Online data transfer is required so that customers can by token from any vending system and different locations.

6.30   Data Format

Individual Meter Status

Column	Data Name	Data Type	Description
1	Meter No	String(12)	014012345678
2	Status	String(1)	0: offline 1:online
3	Reading Time	String(19)	YYYY-MM-DD_HH:mm:ss

7.31 Packing:

Meters must be export packed and properly protected for shipment, rough transportation and storage. Specific care shall be taken for protection in store and reference is made to the climatic condition prevailing in Bangladesh.

Each unit shall be sealed in waterproof polyethylene bag having a silica gel packet placed inside the unit and then packed in polystyrene foam gasket closed by self adhesive tape rating of the meter shall be marked by marker pen or label on the form for easy identification.

Maximum 10 (ten) nos. of complete metering units are allowed to pack into a wooden packaging box lined with heavy gauge polyethylene. Between metering units a suitable packing material for protection and preventing their movement should be used. Silica gel should be provided inside each polyethylene wrapper. The packing case should be able to withstand accidental direct exposure to weather for reasonable period.

The supplier shall be responsible for damages due to inadequate packing. A packing list showing the contents of each packing shall be enclosed in a waterproof envelope secured outside of the packing case. A copy of the packing list shall also be enclosed inside the package.

All packages imported are liable to be opened for customs examination at the port of landing and packing shall therefore be designed to facilitate opening and repackaging thereafter.

A red band (20 cm wide) shall be painted all around each package. Each package shall have the following information printed on it bold letters.

- Name of supplier.
- Port of loading.
- Port of destination.
- Name of consignee.
- Contract number.
- Brief description of stores.
- Number of packages. (total quantity)
- Gross and net weight.
- Dimension.

In addition each package shall be clearly marked or stenciled in red on two sides, the shipping mark Utility Name, BANGLADESH inscribed within a triangle marked shown below:

The shipping mark
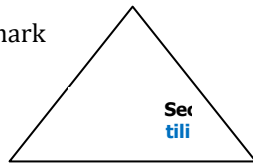
On the other two sides, arrow marking with words " THISSIDE UP" and "FRAGILE" shall be clearly marked or stenciled to indicate the face of the package to keep upward.

THIS SIDE UP

7.33 TECHNICAL ORIENTATION AND QUALITY TEST WITNESS:

A. FACRORY INSPECTION AND TEST WITNESS:

Witnessing of the manufacturing process and tests of the equipment at manufacturer's premises including transfer of technical know-how shall be required/held as detailed elsewhere in Particular Conditions of Contract (GCC 32.1) of tender document and other than this the following will be as follows:

The BPDB's inspection team proposed by the purchaser or consignee (if consignee is Project Director) and approved by the competent authority shall have the right to inspect, examine and test the workmanship and performance of the goods/materials to confirm the conformity to the specification at all reasonable time before and during manufacture at the manufacturer's premises.

The manufacturer will allow inspection team to inspect the manufacturing process and quality control and progress of the work at any time need by BPDB's inspection team. This team will witness the Factory/Technical orientation & Quality test at the manufacturer's plant. The Manufacturer shall have facilities to carry out all tests at its premises and shall provide free of charge such assistance, labor, materials, electricity, fuel, stores, apparatus and instruments as may be requisite and as may be reasonably demanded to carry out such test efficiently.

The inspection team maximum 2 (two) times may inspect (if required) the goods during the manufacturing process or after manufacture of Goods as required and shall also request to supplier for the purchase/ import/ shipping documents of major/key materials of Goods and shall check in accordance with Guaranteed Technical Particulars (GTP) and guarantees of the contract. All expenses for such tests shall be borne by the supplier.

BPDB's Inspection Team will witness the routine test at the manufacturer's premises. Tests shall be performed in accordance with the relevant IEC/BS/ANSI/ASTM/BDS standards or any other standard mentioned in the contract document which shall be complied with the Guaranteed Technical Particulars (GTP) of the Contract. All expenses for such tests shall be borne by the Contractor.

At the time of Factory Test witness BPDB's Inspection Team will check the calibration seal/certificate of the testing/measuring equipment, meters etc. issued by the competent authority. The contractor shall ensure that the Manufacturer shall complete the calibration of the testing/ measuring equipment, meters etc. before the inspection of BPDB's team.

The Supplier shall, after consulting the consignee, give notice to the consignee in writing of the date and the place where the material or equipment will be ready for testing at least 15 days before schedule of inspection. The consignee shall give the supplier timely notice in writing of his intention to attend the test. As and when the

consignee is satisfied that any materials/equipment shall have passed the tests referred to in this clause, consignee shall notify the contractor in writing to that effect.

Should any inspected/ tested goods fail to conform to the specification, the consignee shall have the right to reject any of the items or complete batch if necessary. In that case Supplier has to replace the equipment and to make good of them and the supplier shall conduct similar pre-delivery Inspection and factory tests without any financial involvement to the consignee. In case any of the Equipment/goods found not conforming to the specification at the time of post landing Inspection, the supplier will in no way be relieved from the responsibility of replacing them on making them good at their own cost, despite the Equipment were found good at the time of Factory Acceptance Test in respect of quality and quantity. Nothing in this clause shall in any way release the supplier from any warranty or other obligations under the contract.

If the offered goods are manufactured within the purchaser's country then the manufacturer/supplier shall have the testing facilities at manufacturer's/supplier's premises in accordance with the relevant IEC/BS/ANSI/ASTM/BDS Standards. The inspector(s) shall sent the sample material (selected by the BPDB's Inspection Team consisting of at least three engineers in each consignment) to CERS, BPDB/BUET/CUET/KUET/RUET/DUET to carry out any test(s) pending due to lack of testing facilities or any reason at the manufacturer's/supplier's premises. All cost of testing including carrying, loading, un-loading etc. will be borne by the supplier and shall be deemed to be included in the offered price. If the sample(s) fails to confirm the specification, the full consignment will be rejected.

No goods shall be packed, prepared for shipment/delivery unless it has been approved and written instructions have been received from the consignee.

On successful completion of Pre-shipment inspection/quality test witness, delivery of goods will be made to the designated stores under contractor's/supplier's responsibility until Post-Landing Inspection is successfully completed without any obligation on part of BPDB. Quality and quantity of the delivered goods will be determined at the time of post-landing inspection at the designated stores in presence of the authorized representative of the contractor/supplier. After approval of the satisfactory Post-Landing Inspection, R&I Report will be issued following the contractual obligations.

B.RANDOM SAMPLE TEST DURING FACTORY INSPECTION AND WITNESS: Required

During Pre-delivery Inspection & Factory Test Witnessing of the goods to be supplied under the Contract, the Inspection Team will witness the routine tests at the manufacturer's premises. The Inspection Team will select goods on random sampling basis. The Tests shall be performed in accordance with the relevant IEC/BS/ANSI/ASTM/BDS standards or any other standard mentioned in the contract document which shall be complied with the Guaranteed Technical Particulars (GTP) of the Contract. All expenses for such tests shall be borne by the Contractor.

C. ACCEPTANCE REPORT OF GOODS FOR DELIVERY:

If the test results of the tested sample(s) during factory test witness by the BPDB's inspection team fail to confirm the specification and the Guaranteed Technical Particulars (GTP), the full consignment will be rejected. A formal delivery order will be issued after satisfactory pre-delivery inspection & test report by BPDB's inspection team.

D. POST-DELIVERY INSPECTION & TESTING:

Post Landing Inspection shall be done after arrival of the goods at **Final destination** as detailed elsewhere in Particular Conditions of Contract (GCC 32.1) of Tender Document and other than this the following will be as follows:

The Supplier shall inform (within 5 (five) working days) the purchaser or consignee (if consignee is Project Director) immediately after arrival of the goods at the designated store of BPDB (as per delivery schedule). An Inspection team of BPDB (may be the previously or newly formed team) shall start to perform the post-landing inspection not beyond 10 (ten) working days in presence of supplier's representative after getting informationfrom supplier about the delivery of goods at designated store. The Supplier shall arrange post-landing inspection as per program in consultation with the consignee. If any defect or damage has been found at post-landing inspection, the defective or damaged materials/ goods shall be replaced by the supplier at his own cost within the stipulated time.

The purchaser's or consignee's (if consignee is Project Director) right to inspect, test (where necessary) and rejectthe goods after delivery at the designated stores of BPDB shall in no way be limited or waived by reason of the goods having previously been inspected, tested and passed by the purchaser prior to the goods' delivery.

The Inspection team will check the physical conditions and quantity of the goods delivered. The inspection team will select the sample of good(s) on random sampling basis and sent the selected sample goods to CERS, BPDB or BUET/ CUET/ KUET /RUET (as selected by the inspection team) to carry-out the test(s) as per contract to confirm the conformity to the approved Technical Specifications, Guaranteed Technical Particulars (GTP), drawings and relevant standards. If the tested sample(s) fail to confirm the specifications in tests, the full consignment will be rejected. All cost of testing of Materials/ Goods including carrying, loading, un-loading etc. will be borne by the supplier.

7.34 Guaranteed Technical Particulars (GTP)

GTP of 230 Volt, 5(60) A Single-Phase Smart Pre-Payment Energy Meter.

Sl. No.	Name of Item	Unit	Required Specifications	Full Technical Specification & Standard (to be mentioned)
1	Reference Standard	-	IEC	
2	Manufacturer's Name & Address	-	To be mentioned	
3	Year of manufacturer	-	To be mentioned	
4	Country of Origin	-	To be mentioned	
5	Firmware Version for meter	-	To be mentioned	
6	Firmware Version for communications	-	To be mentioned	
7	Web Based Pre-payment software version	-	To be mentioned	
8	Model of Meter	-	To be mentioned	
9	Type of Meter	-	Indoor/Outdoor	
10	Connection	-	1- phase, 2-wire (unidirectional)	
11	Rated voltage	Volt	230	
12	Maximum voltage	Volt	280	
13	Basic Current (I_b)	Amp	<=5	
14	Maximum Current (Imax)	Amp	>=60	
15	Frequency	Hz	50	
16	Number of Terminal	No.	4	
17	Diameter of Terminal; Bore	mm	6mm to accommodate 10 mm² cable	
18	No. of Element (minimum)	No.	2 (One in Phase & other in Neutral)	
19	Voltage circuit loss at rated voltage	VA & W	5VA, 2 Watt	
20	Current circuit loss at rated current	VA	2.5	
21	Variation of Power factor		0.5 lag to 0.8 lead	
22	Variation of voltage		-30% to +30%	
23	Impulse withstand voltage	KV	6	
24	Starting current	mA	≤0.4% of basic current	
25	KWh register type	-	LCD Display	
26	Meter constant	Impuls	To be mentioned	

Sl. No.	Name of Item	Unit	Required Specifications	Full Technical Specification & Standard (to be mentioned)
		e/ kWhr		
27	Accuracy class	Class	1.0	
28	Performance Curve	-	To be submitted	
29	Type of Battery		Lithium-ion Battery (Re-chargeable/ Non-Rechargeable) Brand: Renata/ Panasonic/ Varta/ Tedrium/ Sanyo/ National/ Tadiran/ Duracell/ Tekcell/Saft (Supported by Manufacturer's Authorization Letter)	
30	Built in clock		Real Time Clock (RTC) as per IEC 62054-21 or updated version with 10 years battery backup. Without support of external battery and AC power, meter should operate at least 01 (one) hour with the support of built-in super-capacitor (Sample meter time and date shall be same as real time of Bangladesh.)	
31	Battery Reserve & Life		10(Ten) Years	
32	No. of Digits for Credit Storage		5+1	
33	Credit Transfer System		CTS	
34	Tariff Structure		Utility's tariff structure	
35	KWhr dispensing register		Solid state LCD Display	
36	Front Page Indications		- Credit Status, - Accept/Reject - Low credit warning - Consumption Rate - Tamper Indication	
37	Disconnection Facility		- On credit expiry, - Decommissioning state - Exceeded Power threshold - When tampered	
38	Provision for emergency Friendly Credit		Yes (Configurable)	
39	Time interval of re-calibration (minimum)	Year	10	
40	Service life (minimum)	Year	10	
41	Weight of meter	Kg	To be mentioned	
42	Overall dimensions (height, width, depth)	mm	To be mentioned	
43	Load Control		To be mentioned	
44	Warranty	Years	3 Years	
45	List of Recommended Spares		To be mentioned	

Sl. No.	Name of Item	Unit	Required Specifications	Full Technical Specification & Standard (to be mentioned)
46	Any other facility if any		To be mentioned	
47	Meter body sealing condition		Hermetically Sealed/ Fully Ultrasonic Welded with Mechanical Interlocking to avoid unauthorized opening of meter cover without breaking and damaging.	
48	Latching relay		As per specification mentioned in Section-7.6.3 (Supported by Manufacturer's Authorization Letter)	
49	Communication		Plug & Play BROADBAND PLC (Meter able to support 4G GPRS).	
50	Application Protocol		DLMS/COSEM and IDIS	

Demonstration of the Prepayment Meter and DCU

1. The Employer shall invite Tenderer to demonstrate smart prepayment meters as part of the technical evaluation. The demonstration of the offered smart meters shall be mandatory to accept the Bids for detailed technical evaluation.

2. The demonstration shall be held in Dhaka and the Employer shall provide a venue with projector.

3. The Tenderer shall arrange all equipment, software and logistics, included but not limited to, computers, printers and network equipment, communication links, smart prepayment meter prototypes, power supplies, test loads for the meters, all cables/wiring and consumables, transport including human resources required for the demonstration.
The contractor shall explain how the demonstration set-up differs from the production set-up required for this Bid and explains the data architecture of the system prior to the demonstration.

The key requirements for the demonstration shall be:

a) A fully functional smart prepayment system with two single phase prepayment meters with BPLC communication modules shall be demonstrated. Demonstration has to be completed on the assigned date. During demonstration, sample meter firmware upgradation/change shall not be allowed.

For demonstration purpose, the Tenderer has to submit fully functional offered type Two Single Phase Smart Pre-payment meters as Sample Meter(s) along with their bid. The tenderer needs not to submit multiple manufacturer's meters during bid submission. During demonstration, the tender shall have to bring their DCU with one other manufacturer's DCU installed in BPDB system and have to interface offered meter with HES for interoperability test in the said demonstration program. During demonstration the tenderer shall be demonstrated using offered type meters with emphasis on demonstrating key functionality. It is to be noted here that without support of external battery and AC power, meter should operate at least one hour with the support of inbuilt super-capacitor.

The Tenderer shall have to present and demonstrate successfully the functionality of the offered type sample meters with HES as per Technical Specification of tender requirements. The Tenderer needs to demonstrate interfacing and interoperability of the offered type smart meter with different manufacturer DCU compliance to IDIS interoperability protocol. The interoperability shall be performed in both ways and vice-versa for the Smart Meters and DCUs. For each single device, proof of conformity for the chosen application standards (e.g., DLMS/COSEM) as well as communication standards (e.g., BPLC, etc.) is required.

b) Checklist

Demonstration should be conducted as per attached checklist

Checklist for Sample Meter Demonstration (Single Phase Smart Pre-payment Meter)

Tender Name :
Tender Ref. No. :
Bidder Name :
Date :
Submitted Sample Meter Serial No :

(a) Physical and Accuracy Test

S/N	Item description	Unit	Required specifications	Available Particulars
1	Reference Standard	-	IEC	
2	Country of origin	-	To be mentioned	
3	Manufacturer's Name & address	-	To be mentioned	
4	Year of Manufacture	-	To be mentioned	
5	Model of Meter	-	To be mentioned	
6	Type of Metering	-	Indoor/Outdoor	
7	Connection	-	1-P, 2-wire (unidirectional)	
8	Overall dimensions	mm	To be mentioned	
9	Rated Voltage	Volt	230	
10	Maximum Voltage	Volt	280	
11	Basic Current (I_b)	Amp	≤ 5	
12	Maximum Current (I_{max})	Amp	≥ 60	
13	Frequency	Hz	50	
14	Number of Terminal	No.	4	
15	Meter constant	Imp/kWh	To be mentioned	
16	Diameter of Terminal bore	mm	6 mm to accommodate 10 mm^2 cable	
17	No. of Element	No.	2	
18	Starting current (minimum)	mA	$\leq 0.4\%$ of basic current	
19	KWh register type	-	LCD Display	
20	Built in clock		∗ Real Time Clock (RTC) as per IEC 62054-21 or updated version with 10 years battery backup. Without support of external battery and AC power, meter should operate at least 01 (one) hour with the support of built-in super-capacitor ∗ Sample meter time and date shall be same as real time of Bangladesh.	

S/N	Item description	Unit	Required specifications	Available Particulars
21	No. of digits	-	5+1	
22	Front Page Indications	-	Credit Status, Accept/Reject, Low Credit warning, Consumption Rate, Tamper Indication, Relay status, Communication status	
23	Meter Base Cover (Section 7.6.2/1)	-	Meter Base cover should be transparent	
24	Connection diagram and Terminal marking	-	Every Meter Shall be indelibly marked with connection diagram and Terminal shall be marked.	
25	Meter body sealing condition	-	Hermetically Sealed/ Fully Ultrasonic Welded with Mechanical Interlocking to avoid unauthorized opening of meter cover without breaking and damaging.	
26	Type of Battery (Supported by Manufacturer's Authorization Letter)	-	∗ Sample Battery Brand and Model. ∗ Battery Vendor list: Renata/Panasonic/Varta/ Tedrium/Sanyo/National/ Tadiran/Duracell/Tekcell/ Saft. ∗ Without support of external battery and AC power, meter should operate at least 01 (one) hour with the support of built-in super-capacitor ∗ Meter battery should have 2.54mm Pin Header Connector for 2 pin interface (applicable for Pin Connector design).	
27	Latching relay	-	Manufacturer Name, Model, Specification should be engraved or marked on the relay body.	
28	Accuracy class	Class	1.0	
29	Measured Accuracy, Section 7.15	% Error	∗ Min^m Bias Voltage (P-N) ∗ The Meter shall be fully functional within 5 seconds after the voltage is applied to the terminal ∗ %Error due to variation of current shall not exceed the limit stipulated in relevant IEC standard ∗ %Error due to variation of voltage ($\pm$ 30%) shall not exceed the limit stipulated in relevant IEC standard	

S/N	Item description	Unit	Required specifications	Available Particulars
			* %Error due to variation of Power Factor from 0.5 lag to 0.8 lead shall not exceed the limit stipulated in relevant IEC standard * Meter accuracy shall not be affected by AC/DC magnetic field from all side of the Meter. Meter shall not be affected by permanent magnet of 0.5T	

(b) Functionality Test

S/N	Item description	Required specifications	Available Particulars
1	Data Display facility (Manual/Auto), Section7.8	**Auto Scroll** Date & Time, Meter Serial No, Balance Amount (Tk), Cum kWh, Current Month MD, Inst. Voltage, Inst. Phase Current, Inst. Neutral Current, Inst. kW, Last Recharge Date & Time, Current Tariff Rate **Scroll with Push Button** Date & Time, Meter Serial No, Balance(Tk), Cum kWh, Inst. Voltage, Inst. Phase current, Inst. Neutral Current, Inst. kW, Current Month MD, Cum kWh of last bill, MD of Last month, Date & Time of last MD, Last recharge (Tk), Last Recharge Date & Time, Error code, Latest sequence number of token **Auto and Manual display item must be configurable**.	
2	Credit Transfer System	CTS	
3	Tariff Structure	Utility's tariff structure	
4	Tariff Management	**Meter shall support** * Stepped Tariffs structure * Time of use * Tariff activation date * Tariff switch-over events * Peak, Off-Peak and Supper Off-peak facility * Future tariff activation facility **New tariff activation will not reset current tariff step**	
5	Parameters to be measured and stored (Section7.7)	* **Instantaneous Values for** Voltage, Current, Cumulative Active Energy (Total, Peak, Off-Peak), Cumulative Reactive Energy (Total, Peak, Off-Peak) * **Billing Parameters** At least 12 months billing data shall be stored in the Meter for Cumulative kWh (Total, Peak, Off-Peak), kVarh (Total, Peak, Off-Peak), MD, PF, Remaining Balance, Money Recharge, etc. **Load survey storage** * Load survey for min 365 days * Load survey for V, I, PF, kWh, kVarh, demand in kW with integration period of 30	

S/N	Item description	Required specifications	Available Particulars
		Minutes, Load profile. **Tamper & Event recording** * Total of last 100 events with date and time detection and logged facility * Over Voltage event * Low Voltage event * Over Current event * Magnet Tamper event * Neutral Missing * Top cover open * Terminal Cover open * Bypassing the connection **Meter should run in normal operation in case of communication module fault.**	
6	Disconnection Facility	* On credit expiry * Exceeded Power threshold * When tampered * Neutral missing at source side * Over load signaling and attempt to reconnect 5 times at 30s interval. * Partial credit recharge in case of negative credit status. * Insertion of "Balance Clear Token" in case of negative credit status.	
7	Friendly Hours (Section 7.18)	* In the Meter there shall be provision to define "Friendly Hours" and "Weekend" as per utility requirement * Meter can avail "Friendly Hours" and "Weekend" after running out credit balance * After finishing the "Weekend" at 00:00 hour meter can avail "Special" facility till 10:00 am.	
8	Emergency Credit Facility (Section7.19)	* Availability of audible alarm sound in case of emergency Credit threshold * Way to silence audible alarm * The meter should not supply energy against emergency credit unless acknowledged by the customer * Meter can avail "Emergency credit facility" after running out credit balance * Way to activate emergency credit facility. * The meter should remain in service until the emergency credit limit has been reached.	
9	Negative balance	* Meter can avail all credit facility for running out of credit balance. * If any credit facility has been previously consumed fully or partially, then the value of negative balance shall be deducted from the next credit token inserted into the meter. * Meter should not be run with any credit facility mode until full loan (negative balance) amount is paid back. * Meter should not clear the negative balance by clear balance token	
10	Account logoff	* The meter should have a provision for account logoff * To logoff the meter, it should accept one	

S/N	Item description	Required specifications	Available Particulars
		termination code generated by the system ∗ The meter shall generate a return code with remaining credit ∗ The return code should be read by pressing one short code and also through online ∗ After accepting the termination code meter shall be decommissioned; once the meter is decommissioned the meter should not run on previous settings	
11	Tamper Detection, Section 7.9	∗ Tamper shall be detected in the event of Terminal Cover open with and without Power Supply ∗ Meter should not Power up / work in neutral missing condition ∗ Removal of Battery shall be considered as a tamper ∗ Tamper shall be detected in the event of magnetic influence with power supply of meter ∗ Meter shall operate normally in case of Phase sequence reversal ∗ Relay shall be disconnected in any tamper event ∗ Without tamper token, meter tamper couldn't be reset ∗ In any connection Meter should be able to count Energy as long as the credit remain ∗ Meter should not be affected for the fault in communication module	
12	Token Validation (Section7.16.2)	∗ In case of invalid token insertion Meter will show relevant message. ∗ If a valid token re-entered in to the Meter, then the Meter will display appropriate message ∗ Without customization token Meter should not be ready to use by any activation code	
13	Meter Mode of operation (Section 7.16.4)	∗ Meter shall be supported at least three modes of operation i.e., Pre-payment mode, Post payment mode and Test mode ∗ In Post-payment mode Meter should detect tamper as per Sl no. 11.	
14	Optical Port & RS485	∗ Meter should have standard optical port for local read and configuration ∗ Meter should have active RS485 port for communication	
15	Application Protocol	∗ DLMS/COSEM & IDIS	
16	Communication	∗ Plug and Play BPLC module (Meter shall be able to support 4G GPRS module) ∗ Adding or exchanging the communication Module should be done without turning off the Meter ∗ Communication test for sample meter must be done with own DCU.	
17	Interoperability Test	∗ Meter shall be capable to communicate with any existing DCU brand installed in BPDB	

Remarks

For Bidder with Name & Designation

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For Tender Evaluation/Inspection Committee

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SECTION: 8
DRAWINGS
(To be submitted)

Justified Short Code

There are short code table, through this short code, user can get the information of meter.

Short code	Data meaning	Short code	Data meaning
Any code	Cancel audible alarm	00	Active emergency overdraft
800	Total positive active energy	801	Meter remaining balance
802	Current date	803	Current time
804	Meter serial No.	805	SGC No.
806	Reason of relay operation	807	Meter status words
808	Total instantaneous power	809	Tariff index number
810	Emergency Overdraft limit	811	Active emergency overdraft
813	Total forward active energy for yesterday	814	Total forward active energy for current month
815	Recharge date for last time	816	Recharge time for last time
817	Recharge amount for last time	818	Log out return code
819	Power outage No	820	Total forward active energy for last month
821	Total forward active energy for last 2nd month	822	Total forward active energy for last 3rd month
823	Total forward active energy for last 4th month	824	Total forward active energy for last 5th month
825	Total forward active energy for last 6th month	830	TOKEN code for last time recharging
831	TOKEN codes for last 2nd time recharging	832	TOKEN codes for last 3rd time recharging
833	TOKEN codes for last 4th time recharging	834	TOKEN codes for last 5th time recharging
835	TOKEN codes for last 6th time recharging	836	TOKEN codes for last 7th time recharging
837	TOKEN codes for last 8th time recharging	838	TOKEN codes for last 9th time recharging
839	TOKEN codes for last 10th time recharging	865	Meter entering normal working mode
866	Measuring accuracy displays 3 decimals, automatically exit after 1 minute	868	Relay testing
869	Maximum power (Load Limit)	870	A phase voltage
871	B phase voltage (not support in single	872	C phase voltage (not support in single phase

	phase meter)		meter)
873	Key version No.	874	A phase current
875	B phase current	876	C phase current (not support in single phase meter)
877	A phase power	878	B phase power
879	C phase power (not support in single phase meter)	880	Average value for daily power consumption
881	Average value for monthly power consumption	886	The price of current Tariff
887	Current step tariff	888	Recharging return code
889	Current TOKEN sequence No.	890	TOKEN rejected times
891	TOKEN accepted times	892	Relay connection times
893	Relay disconnection times	894	Max. overdraft amount under friendly mode
895	Allowed using days under friendly mode	896	Already used days under friendly mode
897	Start time of friendly hour	898	End time of friendly hour
899	Weekend	900	The status of friendly mode 1：uuworkday: No-friendly mode or friendly times is run out 2：F-Hour: Friendly hour 3：uueekend : weekend 4：holiday: holiday 5：EnnErg: emergency mode 6：SpEciAL: weekend or friendly day is finished but does not arrival next day 10 o' clock
901	kWh of Step 1/ kWh of Tariff 1	902	kWh of Step 2/ kWh of Tariff 2
903	kWh of Step 3/ kWh of Tariff 3	904	kWh of Step 4/ kWh of Tariff 4
905	kWh of Step 5/ kWh of Tariff 5	906	kWh of Step 6/ kWh of Tariff 6
907	kWh of Step 7/ kWh of Tariff 7	908	rate of Step 1/ price of Tariff 1
909	rate of Step 2/ price of Tariff 2	910	rate of Step 3/ price of Tariff 3
911	rate of Step 4/ price of Tariff 4	912	rate of Step 5/ price of Tariff 5
913	rate of Step 6/ price of Tariff 6	914	rate of Step 7/ price of Tariff 7
915	rate of Step 8/ price of Tariff 8	916	The average PF of last month
917	Level 1 alarm of balance low	918	Level 2 alarm of balance low
919	Level 3 alarm of balance low	920	Special step status word
921	Already used times of weekend	922	Consumption amount of current month
923	Consumption amount of last month	924	Consumption amount of last 2nd month
925	Consumption amount of last 3rd month	926	Consumption amount of last 4th month
927	Consumption amount of last 5th month	928	Consumption amount of last 6th month
930 *	PFC of last month (not support in single phase meter)	931	PFC of last 2nd month (not support in single phase meter)
932	PFC of last 3rd month (not support in single phase meter)	933	PFC of last 4th month (not support in single phase meter)
934	PFC of last 5th month (not support in single phase meter)	935	PFC oflast 6th month (not support in single phase meter)
940	Reactive energy of last month	941	Reactive energy of last 2nd month
942	Reactive energy of last 3rd month	943	Reactive energy of last 4th month
944	Reactive energy of last 5th month	945	Reactive energy of last 6th month
952	Prepay Mode or Post-pay mode indication	953	Neutral Current
954	Total tariff 1active energy (KWh)	955	Total tariff 2 active energy(KWh)
956	Total tariff 3active energy(KWh)	957	Total tariff 4 active energy(KWh)
958	Total tariff 5active energy(KWh)	959	Total tariff 6 active energy(KWh)
960	Total tariff 7active energy(KWh)	961	Total tariff 8 active energy(KWh)
962	Positive tariff 1 reactive energy	963	Positive tariff 1 reactive energy
964	Positive tariff 3 reactive energy	965	Positive tariff 3 reactive energy

966	Total positive reactive energy	970	Negative tariff 1 reactive energy
971	Negative tariff 2 reactive energy	972	Negative tariff 3 reactive energy
973	Negative tariff 4 reactive energy	974	Total negative reactive energy
981	Emergency overdraft balance	985	Total consumption credit
986	Remaining energy (estimated value)	998	Average power factor of current month
420	The opening terminal cover time for last time	421	The opening terminal cover date for last time

Standard OBIS Information

NO.	Data Name	Standard OBIS	Standard CIM
1	A phase Current	3#1.0.31.7.0.255#2	0.0.0.12.0.1.4.0.0.0.0.0.0.128.0.5.0
2	A phase Power Factor	3#1.0.33.7.0.255#2	0.0.0.12.19.1.37.0.0.0.0.0.0.224.3.38.0
3	A phase Voltage	3#1.0.32.7.0.255#2	0.0.0.12.0.1.54.0.0.0.0.0.0.128.0.29.0
4	Active energy (|+A|-|-A|) Net tariff1	3#1.0.16.8.1.255#2	0.26.0.1.4.1.12.0.0.0.1.0.0.224.3.72.0
5	Active energy (|+A|-|-A|) Net tariff2	3#1.0.16.8.2.255#2	0.26.0.1.4.1.12.0.0.0.2.0.0.224.3.72.0
6	Active energy (|+A|-|-A|) Net tariff3	3#1.0.16.8.3.255#2	0.26.0.1.4.1.12.0.0.0.3.0.0.224.3.72.0
7	Active energy (|+A|-|-A|) Net tariff4	3#1.0.16.8.4.255#2	0.26.0.1.4.1.12.0.0.0.4.0.0.224.3.72.0
8	Active energy (|+A|-|-A|) Net total	3#1.0.16.8.0.255#2	0.26.0.1.4.1.12.0.0.0.0.0.0.224.3.72.0
9	Active energy (|+A|+|-A|) Combined tariff1	3#1.0.15.8.1.255#2	0.26.0.1.20.1.12.0.0.0.1.0.0.224.3.72.0
10	Active energy (|+A|+|-A|) Combined tariff2	3#1.0.15.8.2.255#2	0.26.0.1.20.1.12.0.0.0.2.0.0.224.3.72.0
11	Active energy (|+A|+|-A|) Combined tariff3	3#1.0.15.8.3.255#2	0.26.0.1.20.1.12.0.0.0.3.0.0.224.3.72.0
12	Active energy (|+A|+|-A|) Combined tariff4	3#1.0.15.8.4.255#2	0.26.0.1.20.1.12.0.0.0.4.0.0.224.3.72.0
13	Active energy (|+A|+|-A|) Combined total	3#1.0.15.8.0.255#2	0.26.0.1.20.1.12.0.0.0.0.0.0.224.3.72.0
14	Active energy export (-A)	3#1.0.2.8.0.255#2	0.26.0.1.19.1.12.0.0.0.0.0.0.224.3.72.0
15	Active energy export (-A) rate1	3#1.0.2.8.1.255#2	0.26.0.1.19.1.12.0.0.0.1.0.0.224.3.72.0
16	Active energy export (-A) rate2	3#1.0.2.8.2.255#2	0.26.0.1.19.1.12.0.0.0.2.0.0.224.3.72.0
17	Active energy export (-A) rate3	3#1.0.2.8.3.255#2	0.26.0.1.19.1.12.0.0.0.3.0.0.224.3.72.0
18	Active energy export (-A) rate4	3#1.0.2.8.4.255#2	0.26.0.1.19.1.12.0.0.0.4.0.0.224.3.72.0
19	Active energy export (-A) rate5	3#1.0.2.8.5.255#2	0.26.0.1.19.1.12.0.0.0.5.0.0.224.3.72.0
20	Active energy export (-A) rate6	3#1.0.2.8.6.255#2	0.26.0.1.19.1.12.0.0.0.6.0.0.224.3.72.0
21	Active energy export (-A) rate7	3#1.0.2.8.7.255#2	0.26.0.1.19.1.12.0.0.0.7.0.0.224.3.72.0
22	Active energy export (-A) rate8	3#1.0.2.8.8.255#2	0.26.0.1.19.1.12.0.0.0.8.0.0.224.3.72.0
23	Active energy import (+A)	3#1.0.1.8.0.255#2	0.26.0.1.1.1.12.0.0.0.0.0.0.224.3.72.0
24	Active energy import (+A) rate1	3#1.0.1.8.1.255#2	0.26.0.1.1.1.12.0.0.0.1.0.0.224.3.72.0
25	Active energy import (+A) rate2	3#1.0.1.8.2.255#2	0.26.0.1.1.1.12.0.0.0.2.0.0.224.3.72.0

26	Active energy import (+A) rate3	3#1.0.1.8.3.255#2	0.26.0.1.1.1.12.0.0.0.0.3.0.0.224.3.72.0
27	Active energy import (+A) rate4	3#1.0.1.8.4.255#2	0.26.0.1.1.1.12.0.0.0.0.4.0.0.224.3.72.0
28	Active energy import (+A) rate5	3#1.0.1.8.5.255#2	0.26.0.1.1.1.12.0.0.0.0.5.0.0.224.3.72.0
29	Active energy import (+A) rate6	3#1.0.1.8.6.255#2	0.26.0.1.1.1.12.0.0.0.0.6.0.0.224.3.72.0
30	Active energy import (+A) rate7	3#1.0.1.8.7.255#2	0.26.0.1.1.1.12.0.0.0.0.7.0.0.224.3.72.0
31	Active energy import (+A) rate8	3#1.0.1.8.8.255#2	0.26.0.1.1.1.12.0.0.0.0.8.0.0.224.3.72.0
32	Active MD (-)	4#1.0.2.6.0.255#2	0.8.2.6.19.1.8.0.0.0.0.0.0.0.224.3.38.0
33	Active MD (-) tariff1	4#1.0.2.6.1.255#2	0.8.2.6.19.1.8.0.0.0.0.1.0.0.224.3.38.0
34	Active MD (-) tariff2	4#1.0.2.6.2.255#2	0.8.2.6.19.1.8.0.0.0.0.2.0.0.224.3.38.0
35	Active MD (-) tariff3	4#1.0.2.6.3.255#2	0.8.2.6.19.1.8.0.0.0.0.3.0.0.224.3.38.0
36	Active MD (-) tariff4	4#1.0.2.6.4.255#2	0.8.2.6.19.1.8.0.0.0.0.4.0.0.224.3.38.0
37	Active MD (|QI+QIV|+|QII+QIII|)	4#1.0.15.6.0.255#2	0.8.0.6.20.1.8.0.0.0.0.0.0.0.224.3.38.0
38	Active MD (|QI+QIV|+|QII+QIII|) tariff1	4#1.0.15.6.1.255#2	0.8.0.6.20.1.8.0.0.0.0.1.0.0.224.3.38.0
39	Active MD (|QI+QIV|+|QII+QIII|) tariff2	4#1.0.15.6.2.255#2	0.8.0.6.20.1.8.0.0.0.0.2.0.0.224.3.38.0
40	Active MD (|QI+QIV|+|QII+QIII|) tariff3	4#1.0.15.6.3.255#2	0.8.0.6.20.1.8.0.0.0.0.3.0.0.224.3.38.0
41	Active MD (|QI+QIV|+|QII+QIII|) tariff4	4#1.0.15.6.4.255#2	0.8.0.6.20.1.8.0.0.0.0.4.0.0.224.3.38.0
42	Active MD (+)	4#1.0.1.6.0.255#2	0.8.0.6.1.1.8.0.0.0.0.0.0.0.224.3.38.0
43	Active MD (+) tariff1	4#1.0.1.6.1.255#2	0.8.0.6.1.1.8.0.0.0.0.1.0.0.224.3.38.0
44	Active MD (+) tariff2	4#1.0.1.6.2.255#2	0.8.0.6.1.1.8.0.0.0.0.2.0.0.224.3.38.0
45	Active MD (+) tariff3	4#1.0.1.6.3.255#2	0.8.0.6.1.1.8.0.0.0.0.3.0.0.224.3.38.0
46	Active MD (+) tariff4	4#1.0.1.6.4.255#2	0.8.0.6.1.1.8.0.0.0.0.4.0.0.224.3.38.0
47	Tariff 5 Active MD(+)	4#1.0.1.6.5.255#2	0.8.0.6.1.1.8.0.0.0.0.5.0.0.224.3.38.0
48	Tariff 6 Active MD(+)	4#1.0.1.6.6.255#2	0.8.0.6.1.1.8.0.0.0.0.6.0.0.224.3.38.0
49	Tariff 7 Active MD(+)	4#1.0.1.6.7.255#2	0.8.0.6.1.1.8.0.0.0.0.7.0.0.224.0.1.0
50	Tariff 8 Active MD(+)	4#1.0.1.6.8.255#2	0.8.0.6.1.1.8.0.0.0.0.8.0.0.224.3.38.0
51	Angle of U(L1) - U(L2)	3#1.0.81.7.10.255#2	0.0.0.1.0.1.55.0.0.0.0.0.0.0.224.0.1.0
52	Angle of U(L1) - U(L3)	3#1.0.81.7.20.255#2	0.0.0.1.0.1.55.0.0.0.1.0.0.224.0.1.0
53	Apparent power+ (QI+QIV) , Phase A	3#1.0.29.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.0.128.3.61.0
54	Apparent power+ (QI+QIV) , Phase B	3#1.0.49.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.0.64.3.61.0
55	Apparent power+ (QI+QIV) , Phase C	3#1.0.69.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.0.32.3.61.0
56	B phase Current	3#1.0.51.7.0.255#2	0.0.0.12.0.1.4.0.0.0.0.0.0.0.64.0.5.0
57	B phase Power Factor	3#1.0.53.7.0.255#2	0.0.0.12.19.1.37.0.0.0.0.0.0.0.224.3.63.0
58	B phase Voltage	3#1.0.52.7.0.255#2	0.0.0.12.0.1.54.0.0.0.0.0.0.0.64.0.29.0
59	C phase Current	3#1.0.71.7.0.255#2	0.0.0.12.0.1.4.0.0.0.0.0.0.0.32.0.5.0
60	C phase Power Factor	3#1.0.73.7.0.255#2	0.0.0.12.0.1.38.0.0.0.0.0.0.0.32.0.65.0
61	C phase Voltage	3#1.0.72.7.0.255#2	0.0.0.12.0.1.54.0.0.0.0.0.0.0.32.0.29.0
62	Current , neutral	3#1.0.91.7.0.255#2	0.0.0.1.0.1.4.0.0.0.0.0.0.0.224.0.5.0
63	Daily Freezing For Energy	7#0.0.98.2.0.255#2	11.26.0.1.0.1.12.0.0.0.0.0.0.0.224.3.72.0
64	Daily Freezing For Total Energy	7#0.0.98.5.128.255#2	11.0.0.1.0.1.12.0.0.0.0.0.0.0.224.3.72.0
65	Daily Freezing Prepaid Information	7#0.0.99.2.0.255#2	11.26.0.1.0.1.12.0.0.0.0.1.0.0.224.3.72.0

66	Daily Frozen Forward Active Energy Block	7#0.0.98.1.128.255#2	11.26.0.1.0.1.12.0.0.0.0.2.0.0.224.3.72.0
67	Instantaneous active export power (-A)	3#1.0.2.7.0.255#2	0.0.0.12.19.1.37.0.0.0.0.0.0.224.3.38.0
68	Instantaneous active import power (+A)	3#1.0.1.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.224.3.38.0
69	Instantaneous active import power (+A) L1	3#1.0.21.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.128.3.38.0
70	Instantaneous active import power (+A) L2	3#1.0.41.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.64.3.38.0
71	Instantaneous active import power (+A) L3	3#1.0.61.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.32.3.38.0
72	Instantaneous net frequency	3#1.0.14.7.0.255#2	0.0.0.12.0.1.15.0.0.0.0.0.0.224.0.33.0
73	Instantaneous Power factor (+A/+VA)	3#1.0.13.7.0.255#2	0.0.0.12.0.1.38.0.0.0.0.0.0.0.0.65.0
74	Instantaneous reactive export power (-R)	3#1.0.4.7.0.255#2	0.0.0.12.19.1.37.0.0.0.0.0.0.224.3.63.0
75	Instantaneous reactive import power (+R)	3#1.0.3.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.224.3.63.0
76	Meter Log Off Return Token	1.0.129.129.11.255	0.0.0.12.0.0.0.0.0.0.0.128.0.211.0
77	Monthly Freezing For Active MD Import Register Package	7#0.0.98.7.128.255#2	13.0.0.1.0.1.8.0.0.0.0.0.0.224.3.72.0
78	Monthly Freezing For Energy	7#0.0.98.1.0.255#2	13.0.0.1.0.1.12.0.0.0.1.0.0.224.3.72.0
79	Monthly Freezing For Total Energy	7#0.0.98.6.128.255#2	13.0.0.1.0.1.12.0.0.0.5.0.0.224.3.72.0
80	Monthly Freezing Prepaid Information	7#0.0.99.1.0.255#2	13.0.0.1.0.1.12.0.0.0.2.0.0.224.3.72.0
81	Monthly Frozen Forward Active Energy Block	7#0.0.98.3.128.255#2	13.0.0.1.0.1.12.0.0.0.3.0.0.224.3.72.0
82	Monthly Frozen Special Block	7#0.0.98.9.0.255#2	13.0.0.1.0.1.12.0.0.0.4.0.0.224.0.72.0
83	Reactive energy export (-R)	3#1.0.4.8.0.255#2	0.26.0.1.13.1.12.0.0.0.0.0.0.224.3.73.0
84	Reactive energy export (-R) rate1	3#1.0.4.8.1.255#2	0.26.0.1.13.1.12.0.0.0.1.0.0.224.3.73.0
85	Reactive energy export (-R) rate2	3#1.0.4.8.2.255#2	0.26.0.1.13.1.12.0.0.0.2.0.0.224.3.73.0
86	Reactive energy export (-R) rate3	3#1.0.4.8.3.255#2	0.26.0.1.13.1.12.0.0.0.3.0.0.224.3.73.0
87	Reactive energy export (-R) rate4	3#1.0.4.8.4.255#2	0.26.0.1.13.1.12.0.0.0.4.0.0.224.3.73.0
88	Reactive energy export (-R) rate5	3#1.0.4.8.5.255#2	0.26.0.1.13.1.12.0.0.0.5.0.0.224.3.73.0
89	Reactive energy export (-R) rate6	3#1.0.4.8.6.255#2	0.26.0.1.13.1.12.0.0.0.6.0.0.224.3.73.0
90	Reactive energy export (-R) rate7	3#1.0.4.8.7.255#2	0.26.0.1.13.1.12.0.0.0.7.0.0.224.3.73.0
91	Reactive energy export (-R) rate8	3#1.0.4.8.8.255#2	0.26.0.1.13.1.12.0.0.0.8.0.0.224.3.73.0
92	Reactive energy import (+R)	3#1.0.3.8.0.255#2	0.26.0.1.5.1.12.0.0.0.0.0.0.224.3.73.0
93	Reactive energy import (+R) rate1	3#1.0.3.8.1.255#2	0.26.0.1.1.1.12.0.0.0.1.0.0.224.3.73.0
94	Reactive energy import (+R) rate2	3#1.0.3.8.2.255#2	0.26.0.1.1.1.12.0.0.0.2.0.0.224.3.73.0
95	Reactive energy import (+R) rate3	3#1.0.3.8.3.255#2	0.26.0.1.1.1.12.0.0.0.3.0.0.224.3.73.0

96	Reactive energy import (+R) rate4	3#1.0.3.8.4.255#2	0.26.0.1.1.1.12.0.0.0.0.4.0.0.224.3.73.0
97	Reactive energy import (+R) rate5	3#1.0.3.8.5.255#2	0.26.0.1.1.1.12.0.0.0.0.5.0.0.224.3.73.0
98	Reactive energy import (+R) rate6	3#1.0.3.8.6.255#2	0.26.0.1.1.1.12.0.0.0.0.6.0.0.224.3.73.0
99	Reactive energy import (+R) rate7	3#1.0.3.8.7.255#2	0.26.0.1.1.1.12.0.0.0.0.7.0.0.224.3.73.0
100	Reactive energy import (+R) rate8	3#1.0.3.8.8.255#2	0.26.0.1.1.1.12.0.0.0.0.8.0.0.224.3.73.0
101	Reactive MD (-)	4#1.0.4.6.0.255#2	0.8.0.6.19.1.8.0.0.0.0.0.0.0.224.3.63.0
102	Reactive MD (-)tariff1	4#1.0.4.6.1.255#2	0.8.0.6.19.1.8.0.0.0.1.0.0.224.3.63.0
103	Reactive MD (-)tariff2	4#1.0.4.6.2.255#2	0.8.0.6.19.1.8.0.0.0.2.0.0.224.3.63.0
104	Reactive MD (-)tariff3	4#1.0.4.6.3.255#2	0.8.0.6.19.1.8.0.0.0.3.0.0.224.3.63.0
105	Reactive MD (-)tariff4	4#1.0.4.6.4.255#2	0.8.0.6.19.1.8.0.0.0.4.0.0.224.3.63.0
106	Reactive MD (+)	4#1.0.3.6.0.255#2	0.8.0.6.1.1.8.0.0.0.0.0.0.224.3.63.0
107	Reactive MD (+) tariff1	4#1.0.3.6.1.255#2	0.8.0.6.1.1.8.0.0.0.1.0.0.224.3.63.0
108	Reactive MD (+) tariff2	4#1.0.3.6.2.255#2	0.8.0.6.1.1.8.0.0.0.2.0.0.224.3.63.0
109	Reactive MD (+) tariff3	4#1.0.3.6.3.255#2	0.8.0.6.1.1.8.0.0.0.3.0.0.224.3.63.0
110	Reactive MD (+) tariff4	4#1.0.3.6.4.255#2	0.8.0.6.1.1.8.0.0.0.4.0.0.224.3.63.0
111	Reactive power(+), Phase A	3#1.0.23.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.128.3.63.0
112	Reactive power(+), Phase B	3#1.0.43.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.64.3.63.0
113	Reactive power(+), Phase C	3#1.0.63.7.0.255#2	0.0.0.12.1.1.37.0.0.0.0.0.0.32.3.63.0
114	Relay Control Mode	70#0.0.96.3.10.255#4	0.0.0.12.0.0.0.0.0.0.5.0.211.0
115	Relay Control Status	70#0.0.96.3.10.255#3	0.0.0.12.0.0.0.0.0.0.4.0.211.0
116	Relay Output Status	70#0.0.96.3.10.255#2	0.0.0.12.0.0.0.0.0.0.3.0.211.0
117	Remaining balance	3#1.0.140.129.0.255#2	0.0.0.12.0.0.0.0.1.0.0.0.0.0.0
118	Tariff 1 Active billing energy+	3#1.0.1.9.1.255#2	13.0.0.1.1.1.12.0.0.0.0.1.0.0.224.3.72.0
119	Tariff 1 Active MD(-) occurring time	4#1.0.2.6.1.255#5	0.8.0.6.19.1.7.0.0.0.1.0.0.224.0.1.0
120	Tariff 1 Active MD(+) occurring time	4#1.0.1.6.1.255#5	0.8.0.6.1.1.7.0.0.0.1.0.0.224.0.1.0
121	Tariff 1 apparent energy-	3#1.0.10.8.1.255#2	0.0.0.1.19.1.12.0.0.0.1.0.0.224.3.71.0
122	Tariff 1 apparent energy+	3#1.0.9.8.1.255#2	0.0.0.1.1.1.12.0.0.0.1.0.0.224.3.71.0
123	Tariff 1 apparent MD(-)	4#1.0.10.6.1.255#2	0.8.0.6.19.1.8.0.0.0.1.0.0.224.0.61.0
124	Tariff 1 apparent MD(-) occurring time	4#1.0.10.6.1.255#5	0.8.0.6.19.1.7.0.0.0.1.0.0.224.0.1.0
125	Tariff 1 apparent MD(+)	4#1.0.9.6.1.255#2	0.8.0.6.1.1.8.0.0.0.1.0.0.224.0.61.0
126	Tariff 1 apparent MD(+) occurring time	4#1.0.9.6.1.255#5	0.8.0.6.1.1.7.0.0.0.1.0.0.224.0.1.0
127	Tariff 1 reactive billing energy+	3#1.0.3.9.1.255#2	13.0.0.1.1.1.12.0.0.0.0.1.0.0.224.3.73.0
128	Tariff 1 reactive MD(-) occurring time	4#1.0.4.6.1.255#5	0.8.0.6.19.1.7.0.0.0.1.0.0.224.0.1.0
129	Tariff 1 reactive MD(+) occurring time	4#1.0.3.6.1.255#5	0.8.0.6.1.1.7.0.0.0.1.0.0.224.0.61.0
130	Tariff 2 Active billing energy+	3#1.0.1.9.2.255#2	13.0.0.1.1.1.12.0.0.0.0.2.0.0.224.3.72.0
131	Tariff 2 Active MD(-) occurring time	4#1.0.2.6.2.255#5	0.8.0.6.19.1.7.0.0.0.2.0.0.224.0.1.0
132	Tariff 2 Active MD(+) occurring time	4#1.0.1.6.2.255#5	0.8.0.6.1.1.7.0.0.0.2.0.0.224.0.1.0
133	Tariff 2 apparent energy-	3#1.0.10.8.2.255#2	0.0.0.1.19.1.12.0.0.0.2.0.0.224.3.71.0
134	Tariff 2 apparent energy+	3#1.0.9.8.2.255#2	0.0.0.1.1.1.12.0.0.0.2.0.0.224.3.71.0
135	Tariff 2 apparent MD(-)	4#1.0.10.6.2.255#2	0.8.0.6.19.1.8.0.0.0.2.0.0.224.0.61.0
136	Tariff 2 apparent MD(-) occurring time	4#1.0.10.6.2.255#5	0.8.0.6.19.1.7.0.0.0.2.0.0.224.0.1.0
137	Tariff 2 apparent MD(+)	4#1.0.9.6.2.255#2	0.8.0.6.1.1.8.0.0.0.2.0.0.224.0.61.0
138	Tariff 2 apparent MD(+) occurring time	4#1.0.9.6.2.255#5	0.8.0.6.1.1.7.0.0.0.2.0.0.224.0.1.0

139	Tariff 2 reactive billing energy+	3#1.0.3.9.2.255#2	13.0.0.1.1.1.12.0.0.0.0.2.0.0.224.3.73.0
140	Tariff 2 reactive MD(-) occurring time	4#1.0.4.6.2.255#5	0.8.0.6.19.1.7.0.0.0.0.2.0.0.224.0.1.0
141	Tariff 2 reactive MD(+) occurring time	4#1.0.3.6.2.255#5	0.8.0.6.1.1.7.0.0.0.0.2.0.0.224.0.61.0
142	Tariff 3 Active billing energy+	3#1.0.1.9.3.255#2	13.0.0.1.1.1.12.0.0.0.0.3.0.0.224.3.72.0
143	Tariff 3 Active MD(-) occurring time	4#1.0.2.6.3.255#5	0.8.0.6.19.1.7.0.0.0.0.3.0.0.224.0.1.0
144	Tariff 3 Active MD(+) occurring time	4#1.0.1.6.3.255#5	0.8.0.6.1.1.7.0.0.0.0.3.0.0.224.0.1.0
145	Tariff 3 apparent energy-	3#1.0.10.8.3.255#2	0.0.0.1.19.1.12.0.0.0.0.3.0.0.224.3.71.0
146	Tariff 3 apparent energy+	3#1.0.9.8.3.255#2	0.0.0.1.1.1.12.0.0.0.0.3.0.0.224.3.71.0
147	Tariff 3 apparent MD(-)	4#1.0.10.6.3.255#2	0.8.0.6.19.1.8.0.0.0.0.3.0.0.224.0.61.0
148	Tariff 3 apparent MD(-) occurring time	4#1.0.10.6.3.255#5	0.8.0.6.19.1.7.0.0.0.0.3.0.0.224.0.1.0
149	Tariff 3 apparent MD(+)	4#1.0.9.6.3.255#2	0.8.0.6.1.1.8.0.0.0.0.3.0.0.224.0.61.0
150	Tariff 3 apparent MD(+) occurring time	4#1.0.9.6.3.255#5	0.8.0.6.1.1.7.0.0.0.0.3.0.0.224.0.1.0
151	Tariff 3 reactive billing energy+	3#1.0.3.9.3.255#2	13.0.0.1.1.1.12.0.0.0.0.3.0.0.224.3.73.0
152	Tariff 3 reactive MD(-) occurring time	4#1.0.4.6.3.255#5	0.8.0.6.19.1.7.0.0.0.0.3.0.0.224.0.1.0
153	Tariff 3 reactive MD(+) occurring time	4#1.0.3.6.3.255#5	0.8.0.6.1.1.7.0.0.0.0.3.0.0.224.0.61.0
154	Tariff 4 Active billing energy+	3#1.0.1.9.4.255#2	13.0.0.1.1.1.12.0.0.0.0.4.0.0.224.3.72.0
155	Tariff 4 Active MD(-) occurring time	4#1.0.2.6.4.255#5	0.8.0.6.19.1.7.0.0.0.0.4.0.0.224.0.1.0
156	Tariff 4 Active MD(+) occurring time	4#1.0.1.6.4.255#5	0.8.0.6.1.1.7.0.0.0.0.4.0.0.224.0.1.0
157	Tariff 4 apparent energy-	3#1.0.10.8.4.255#2	0.0.0.1.19.1.12.0.0.0.0.4.0.0.224.3.71.0
158	Tariff 4 apparent energy+	3#1.0.9.8.4.255#2	0.0.0.1.1.1.12.0.0.0.0.4.0.0.224.3.71.0
159	Tariff 4 apparent MD(-)	4#1.0.10.6.4.255#2	0.8.0.6.19.1.8.0.0.0.0.4.0.0.224.0.61.0
160	Tariff 4 apparent MD(-) occurring time	4#1.0.10.6.4.255#5	0.8.0.6.19.1.7.0.0.0.0.4.0.0.224.0.1.0
161	Tariff 4 apparent MD(+)	4#1.0.9.6.4.255#2	0.8.0.6.1.1.8.0.0.0.0.4.0.0.224.0.61.0
162	Tariff 4 apparent MD(+) occurring time	4#1.0.9.6.4.255#5	0.8.0.6.1.1.7.0.0.0.0.4.0.0.224.0.1.0
163	Tariff 4 reactive billing energy+	3#1.0.3.9.4.255#2	13.0.0.1.1.1.12.0.0.0.0.4.0.0.224.3.73.0
164	Tariff 4 reactive MD(-) occurring time	4#1.0.4.6.4.255#5	0.8.0.6.19.1.7.0.0.0.0.4.0.0.224.0.1.0
165	Tariff 4 reactive MD(+) occurring time	4#1.0.3.6.4.255#5	0.8.0.6.1.1.7.0.0.0.0.4.0.0.224.0.61.0
166	Tariff 5 Active MD(+) occurring time	4#1.0.1.6.5.255#5	0.8.0.6.1.1.7.0.0.0.0.5.0.0.224.0.1.0
167	Tariff 6 Active MD(+) occurring time	4#1.0.1.6.6.255#5	0.8.0.6.1.1.7.0.0.0.0.6.0.0.224.0.1.0
168	Tariff 7 Active MD(+) occurring time	4#1.0.1.6.7.255#5	0.8.0.6.1.1.7.0.0.0.0.7.0.0.224.0.1.0
169	Tariff 8 Active MD(+) occurring time	4#1.0.1.6.8.255#5	0.8.0.6.1.1.7.0.0.0.0.8.0.0.224.0.1.0
170	Total Active billing energy+	3#1.0.1.9.0.255#2	0.26.0.1.0.1.12.0.0.0.0.0.0.0.224.3.72.0
171	Total Active MD(-) occurring time	4#1.0.2.6.0.255#5	0.8.0.6.19.1.7.0.0.0.0.0.0.0.224.0.1.0
172	Total Active MD(+) occurring time	4#1.0.1.6.0.255#5	0.8.0.6.1.1.7.0.0.0.0.0.0.0.224.0.1.0
173	Total apparent energy-	3#1.0.10.8.0.255#2	0.0.0.1.19.1.12.0.0.0.0.0.0.0.224.3.71.0
174	Total apparent energy+	3#1.0.9.8.0.255#2	0.0.0.1.1.1.12.0.0.0.0.0.0.0.224.3.71.0
175	Total apparent MD(-)	4#1.0.10.6.0.255#2	0.8.0.6.19.1.8.0.0.0.0.0.0.0.224.0.61.0
176	Total apparent MD(-) occurring time	4#1.0.10.6.0.255#5	0.8.0.6.19.1.7.0.0.0.0.0.0.0.224.0.1.0
177	Total apparent MD(+)	4#1.0.9.6.0.255#2	0.8.0.6.1.1.8.0.0.0.0.0.0.0.224.0.61.0
178	Total apparent MD(+) occurring time	4#1.0.9.6.0.255#5	0.8.0.6.1.1.7.0.0.0.0.0.0.0.224.0.1.0
179	Total average power factor	3#1.0.13.15.0.255#2	0.2.0.1.0.1.38.0.0.0.0.0.0.0.224.0.65.0
180	Total average power factor, tariff 1	3#1.0.13.15.1.255#2	0.2.0.1.0.1.38.0.0.0.0.1.0.0.224.0.65.0
181	Total average power factor, tariff 2	3#1.0.13.15.2.255#2	0.2.0.1.0.1.38.0.0.0.0.2.0.0.224.0.65.0

182	Total average power factor, tariff 3	3#1.0.13.15.3.255#2	0.2.0.1.0.1.38.0.0.0.0.3.0.0.224.0.65.0
183	Total average power factor, tariff 4	3#1.0.13.15.4.255#2	0.2.0.1.0.1.38.0.0.0.0.4.0.0.224.0.65.0
184	Total reactive billing energy+	3#1.0.3.9.0.255#2	13.0.0.1.1.1.12.0.0.0.0.0.0.0.224.3.73.0
185	Total reactive MD(-) occurring time	4#1.0.4.6.0.255#5	0.8.0.6.19.1.7.0.0.0.0.0.0.0.224.0.1.0
186	Total reactive MD(+) occurring time	4#1.0.3.6.0.255#5	0.8.0.6.1.1.7.0.0.0.0.0.0.0.224.0.61.0
187	Vector sum of current in all Phases	3#1.0.128.7.0.255#2	0.0.0.1.0.1.4.0.0.0.0.0.0.0.224.0.5.0

(Unified Pre-payment System API)

1 Multi-factories Access Platform

1.1 Access Platform Architecture Design
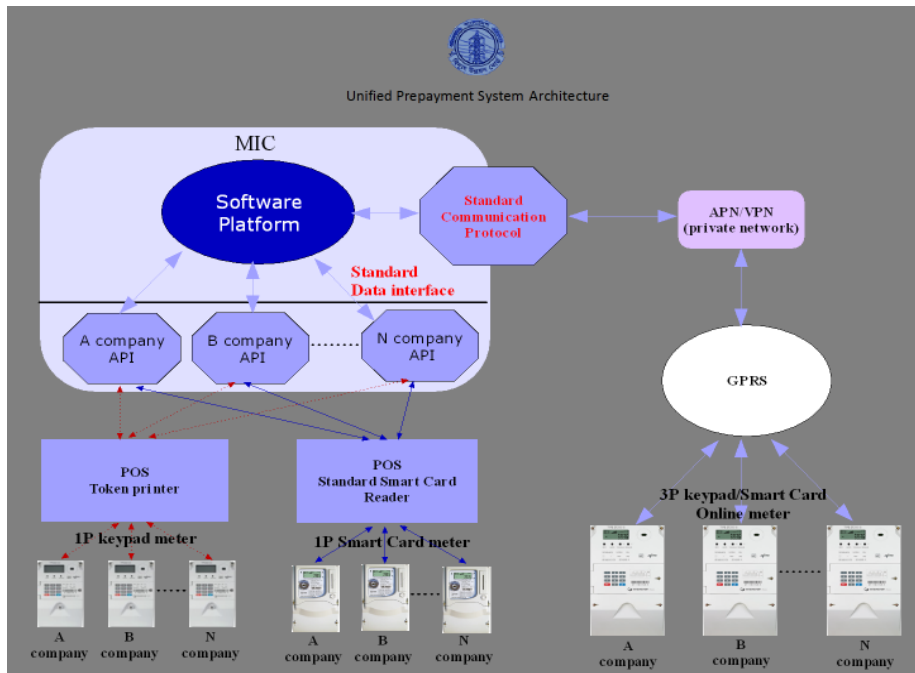
Each manufacturer provides its own encryption / decryption API, integrated into the system software.

When dealing with business based on different meters from each manufacturer, the system automatically calls the corresponding manufacturers' encryption/ decryption API.

The system defines uniformly data exchange interface corresponding to different business, such as input and output parameters.

When dealing with a business for the keypad meter, the system will call the encryption/ decryption API, generates the corresponding Token, and print;

MIC communicates with GPRS meters of other factories according to standard data exchange mechanism.

Note: Token in this document means encrypted data.

2. Business Process

2.1 Vending as example:
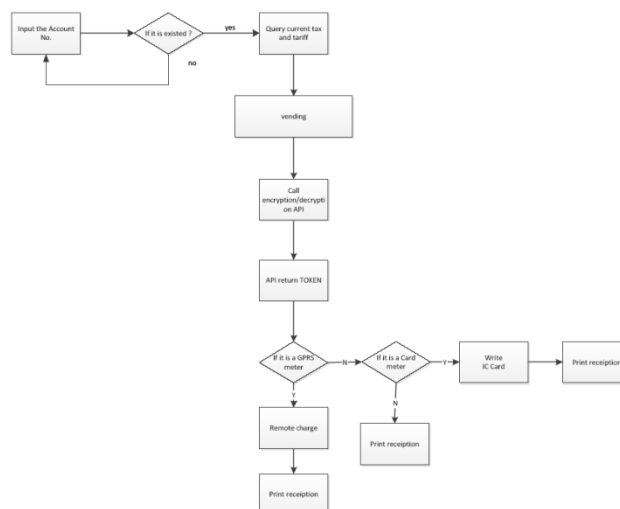
3. Keypad Meter Access design

3.1 Error Code definition:

      i.   0 or empty: success
      ii.   1: sequence number is not excepted
      iii.   2: tariff Index argument error, not in scope
      iv.   3: keyVersion argument not in scope
      v.   4: keyExpiredTime not in scope(0-255)
      vi.   5: keyNo exceed 65535 or < 0
      vii.   6: meterNo is not excepted
      viii.   7: credit amount <= 0
      ix.   8: unknown reason

3.2 Standard Interface for Generating A Variety of Token

3.2.1 Token Standard Interface Define

Programming language	JAVA
Functionality	Token standard interface class
Package	com.hx.ami.spi
Interface	Token

Class definition	public interface Token
	{
	Generatecredit Token
	public String getCreditToken(String meterNo, String sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo, double amount);
	
	Generate key change Token
	public String getKeyChangeToken (String meterNo, String sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, String nSgc, int nTariffIndex, int nKeyVersion,int nKeyExpiredTime, long nKeyNo);
	
	Generate Management Token
	Generate clear balance Token
	public String getClearBalanceToken (String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo);
	Generate clear event Token
	public String getClearEventToken (String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo);
	Generate max Power Limit Mode Token
	public String getMaxPowerLimitToken(String meterNo,String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo, int activationModel, String date,int[] maxPowerLimits, int[] hours);
	Generate single Tariff Token
	public String getSingleTariffToken(String meterNo, String Sgc, int tarrifIndex,int keyVersion, int keyExpiredTime, long keyNo, int seqNo,String activatingDate, int activatingModel, int validDate, int rate);
	Generate step Tariff Token
	public String getStepTariffToken(String meterNo, String Sgc, int tarrifIndex,int keyVersion, int keyExpiredTime, long keyNo, int seqNo,String activatingDate, String validDate, int[] rates, int[] steps);
	Generate Tou Tariff Token
	public String getTOUTariffToken(String meterNo, String Sgc, int tarrifIndex,int keyVersion, int keyExpiredTime, long keyNo, int seqNo,String activatingDate, int activatingModel, int validDate, int[] rates, int[] times);
	Generate Friend Mode Token

<table>
<tr><td></td><td>public String getFriendModeToken(String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo, int friendMode, int[] times, int[] days);

Generate Public Holiday Token
generateHolidayModeToken(String meterNo,String sgcId, int ti, int kv, int ke, int seq, int keyNo,int holidayMode, String[] days);

Generate Change Meter Mode Token
  public String getChangeMeterModeToken(String meterNo, String Sgc,
int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo,int mode);

Generate Set Credit Amount Limit And Overdraw Amount Limit Token
public String getSetCreditAmountLimitOrOverdrawAmountLimitToken(
String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo, int amountType, int amountLimit);

Generate Set Low Credit Warning Limit Token
public String SetLowCreditWarningLimitToken(
String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo, int amountType, int amountLimit);

  Generate LogoffReturn Token
  public String generateLogoffReturnToken (String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, int keyNo, int seqNo);

Resolve the Return Token
public String resolveReturnToke(String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, String Token);
4) Generate **Test Token**
public String getTestToken (int manufacturingID, int control);
}</td></tr>
<tr><td></td><td></td></tr>
</table>

3.2.2 Charge Interface Definition

<table>
<tr><td>Functionality</td><td colspan="5">To get credit Token</td></tr>
<tr><td>Application</td><td colspan="5">To call the function and generate credit token when vending.

seqNo : Each token has sequence number except change-key-token. seqNo will increase 1 for each token generated and change to 1 when above 200;

keyNo: when seqNo change from 200 to 1,keyNo add 1.

keyExpiredTime: Global system parameter used as cipher fact. System can change it. Nothing to do with key expiration. Just a encryption fact.

Key version: Global encryption fact, it will be changed in case all meter need to change keys.</td></tr>
<tr><td>Function name</td><td colspan="5">**getCreditToken**</td></tr>
<tr><td>Parameter list</td><td colspan="5"><table>
<tr><td>**Parameter name**</td><td>**Type**</td><td>**Scope or length**</td><td>**Description**</td></tr>
<tr><td>meterNo</td><td>String</td><td>String of 12 numbers</td><td>Meter number</td></tr>
<tr><td>Sgc</td><td>String</td><td>String of 6 numbers</td><td>Supply group code
System parameter.</td></tr>
<tr><td>tarrifIndex</td><td>Int</td><td>1-99</td><td>Tariff index
When custom change tariff, this value may change to any of 1-99</td></tr>
<tr><td>keyVersion</td><td>Int</td><td>1-9</td><td>Key version
Global encryption fact, it will be changed in case all meter need to change keys.</td></tr>
<tr><td>keyExpiredTime</td><td>Int</td><td>0-255</td><td>Global system parameter used as cipher fact. System can change it. Nothing to do with</td></tr>
</table></td></tr>
</table>

				key expiration. Just a encryption fact
	keyNo	Long	0-65535	Key Sequence, similar to key changed times, see above method descpt.
	seqNo	Int	1-200	Token Sequence
	amount	Int	0-99999999(scale&unit 0.01TK)	Credit amount
Return value	Return XML String Xml format: <?xml version="1.0" encoding="UTF-8"?> <result> <errorCode></errorCode> <tokens> <token></token> … <tokens> </result> Note： errorCode see 3. Chart definition. If succeeded, need return an array of <tokens>elements.			

Function definition	public String getCreditToken(String meterNo, String sgc, int tarrifIndex,
	
	int keyVersion, int keyExpiredTime, long keyNo, int seqNo, int amount)
	
	{
	
	…
	
	}			

3.2.3 Key Change Interface Definition

Functionality	To get key change Token			
Application	As soon as user wants to charge money , to generate the manage token and test token ,and judge if the encryption factor has been changed, if changed , to call function and generate change token. This function is called at four case: Meter installed and custom purchase energy at first time Called if tariff changed SeqNo change from 200 to 1. Called when operator press menu to change key. For the first time registration, parameter defines as below: tariffIndex=0; keyVersion=0; keyExpiredTime=0; keyNo=0;			
Function name	**getKeyChangeToken**			
Parameter list	**Parameter name**	**Type**	**Scope or length**	**Description**
	meterNo	String	String of 12 numbers	Meterno.
	Sgc	String	String of 6 numbers	Old Supply group code
	tariffIndex	Int	1-99	Old Tariff index

	keyVersion	Int	1-9	Old Key version
	keyExpiredTime	Int	0-255	Old Key expire time
	keyNo	Long	0-65535	Old Key Sequence
	nSgc	Int	String of 6 numbers	Current supply grop code
	nTariffIndex	Int	1-99	Current Tariff index
	nKeyVersion	Int	1-9	Current Key version
	nKeyExpiredTime	Int	0-255	Current Key expire time
	nKeyNo	Int	0-65535	Current Key Sequence
Return value	Return XML String Xml format: \<?xml version="1.0" encoding="UTF-8"?> \<result> \<errorCode>\</errorCode> \<tokens> \<token>\</token> … \<token>\</token> \<tokens> \</result> Note： errorCode definition refer to chart 3. If succeeded, need return an array of \<tokens>elements			

Function definition	public String getKeyChangeToken (String meterNo, String sgc, int tarrifIndex,
	int keyVersion, int keyExpiredTime, long keyNo, String nSgc, int nTariffIndex, int nKeyVersion,int nKeyExpiredTime, int nKeyNo)
	{
	    …
	}			

3.2.4 Management Token

3.2.4.1 Generate Clear Meter Balance Token

Functionality	To get clear balance Token			
Application	To clear balance			
Function name	getClearBalanceToken			
Parameter list	Parameter name	Type	Scope or length	Description
	meterNo	String	String of 12 numbers	Meterno.
	sgc	String	String of 6 numbers	Supply group code
	tariffIndex	Int	1-99	Tariff index
	keyVersion	int	1-9	Key version
	keyExpiredTime	int	0-255	Key expire time
	keyNo	long	0-65535	Key Sequence
	seqNo	int	1-255	Token Sequence
Return value	Return XML String Xml format: \<?xml version="1.0" encoding="UTF-8"?>			

	\<result\>
	\<errorCode\>\</errorCode\>
	\<tokens\>
	\<token\>\</token\>
	...
	\<token\>\</token\>
	\<tokens\>
	\</result\>
	Note：
	errorCode definition refer to chart 3.
	If succeeded, need return an array of \<tokens\>elements
Function definition	**public String getClearBalanceToken (String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo)**
	{
	...
	}

3.2.4.2 Generate Clear Event Token

Functionality	To get clear event Token			
Application	**To clear event**			
Function name	getClearEventToken			
Parameter list	Parameter name	Type	Scope or length	Description
	meterNo	**String**	**String of 12 numbers**	**Meterno.**
	sgc	**String**	**String of 6 numbers**	**Supply group code**
	tariffIndex	**int**	**1-99**	**Tariff index**
	keyVersion	**int**	**1-9**	**Key version**
	keyExpiredTime	**int**	**0-255**	**Key expire time**
	keyNo	**long**	**0-65535**	**Key Sequence**
	seqNo	**int**	**1-255**	**Token Sequence**
Return value	**Return XML String**			
	Xml format:			
	\<?xml version="1.0" encoding="UTF-8"?\>			
	\<result\>			
	\<errorCode\>\</errorCode\>			
	\<tokens\>			
	\<token\>\</token\>			
	...			
	\<token\>\</token\>			
	\<tokens\>			
	\</result\>			
	Note：			
	errorCode definition refer to chart 3.			
	If succeeded, need return an array of \<tokens\>elements			

Function definition	public String getClearEventToken (String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo)
	
	{
	
	…
	
	}

Functionality	To get the set up Max Power Limit Mode Token			
Application	**To set up Max Power Limit Mode Token**			
Function name	getMaxPowerLimitToken			
Parameter list	Parameter name	Type	Scope or length	Description
	meterno.	**String**	**String of 12 numbers**	**Meterno.**
	sgc	**String**	**String of 6 numbers**	**Supply group code**
	tariffIndex	**Int**	**1-99**	**Tariff index**
	keyVersion	**Int**	**1-9**	**Key version**
	keyExpiredTime	**Int**	**0-255**	**Key expire time**
	keyNo	**Long**	**0-65535**	**Key Sequence**
	seq	**Int**	**1-255**	**Token Sequence**
	activatingModel	**Int**	**0-1** **0：Noramal Mode** **1：Immediately switch mode**	**Active Mode** **This parameter always 1.**
	activatingDate	String	**YYYY-MM-DD**	**Active Date** Change Date type to String type：adapt to all kinds development languages
	maxPowerLimits	**int[]**	**1-2047 (array length :2) scale&unit:0.1kW**	**Max Power array**
	Hours	**Int[]**	**0-23 (array length :2)unit:hour**	**Active time**
Return value	**Return XML String** **Xml format:** **<?xml version="1.0" encoding="UTF-8"?>** **<result>** </result>			

	Note: **errorCode definition refer to chart 3.** **If succeeded, need return an array of \<tokens\>elements**
Function definition	**public String getMaxPowerLimitToken (String meterNo,** ring Sgc,int tarrifIndex, int keyVersion, int keyExpiredTime , long keyNo, int **seq , int activatingModel, String date int[] maxPowerLimits, int[] hours)** **{** **…** **}**

3.2.4.3 Generate Setup Max Power Limit Mode Token

3.2.4.4 Generate Setup Single Tariff Token

Functionality	To get the Setup Single Tarrif Token			
Application	**To set up single tarrif**			
Function name	getSingleTariffToken			
Parameter list	Parameter name	Type	Scope or length	Description
	meterNo	**String**	**String of 12 numbers**	**Meterno.**
	sgc	**String**	**String of 6 numbers**	**Supply group code**
	tariffIndex	**Int**	**1-99**	**Tariff index**
	keyVersion	**Int**	**1-9**	**Key version**
	keyExpiredTime	**Int**	**0-255**	**Key expire time**
	keyNo	**Long**	**0-65535**	**Key Sequence**
	seq	**Int**	**1-255**	**Token Sequence**
	activatingDate	String	**YYYY-MM-DD**	**Active date** Change Date type to String type: adapt to all kinds development languages
	activatingModel	**Int**	**0-1** **0: Normal Mode** **1: Immediately switch mode**	**Active Mode always 1.**
	validate	**Int**	**0-7**	**Validate always 0.**
	rate	**Int**	**1-8191（scale&unit: 0.01TK）By the integer bits and fractional bits, up to two decimal places, the maximum rate of price can be set to 81.91**	**Unit price**
Return value	**Return XML String** **Xml format:**			

	<?xml version="1.0" encoding="UTF-8"?> **<result>** <errorCode></errorCode> <tokens> <token></token> ... <token></token> <tokens> </result> Note： **errorCode definition refer to chart 3.** **If succeeded, need return an array of <tokens>elements**
Function definition	**public String getSingleTariffToken(String meterNo, String Sgc, int tarrifIndex,** **int keyVersion, int keyExpiredTime , long keyNo, int seq,** **String activatingDate, int activatingModel,int validDate, int rate)** **{** **...** **}**

3.2.4.5 Generate Setup Step Tariff Token

Functionality	To get the Setup Step Tarrif Token				
Application	**To set up step tarrif**				
Function name	getStepTariffToken				
Parameter list	Parameter name	Type	Scope or length	Description	
	meterNo	**String**	**String of 12 numbers**	**Meterno.**	
	sgc	**String**	**String of 6 numbers**	**Supply group code**	
	tariffIndex	**int**	**1-99**	**Tariff index**	
	keyVersion	**int**	**1-9**	**Key version**	
	keyExpiredTime	**int**	**0-255**	**Key expire time**	
	keyNo	**long**	**0-65535**	**Key Sequence**	
	seq	**int**	**1-255**	**Token Sequence**	
	activatingDate	String	**YYYY-MM-DD**	**Active date** Change Date type to String type：adapt to all kinds development languages	
	validate	**int**	**0-7**	**Effective date**	
	activatingModel	**Int**	**0-1** **0：Normal Mode** **1：Immediately switch mode**	**Effective Mode** **Always 1**	
	rates	**int[]**	**Length 4** **1-8191(scale&unit：0.01TK) By the integer bits and fractional bits, up to two decimal places, the maximum rate of price can be set to 81.91**	**Price array**	

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| | steps | int[] | 1-4096 (the max array length :8) scale&unit:1 kWh | Step array | |

Return value	Return XML String Xml format: **<?xml version="1.0" encoding="UTF-8"?>** **<result>** <errorCode></errorCode> <tokens> <token></token> **...** **<token></token>** **<tokens>** **</result>** for example : 0-100 kWh rate：2.3TK 100-200kWh rate: 2.7TK 200-300kWh rate: 3.2TK 300-∞ rate: 4.5TK rate[]= {2.3,2.7,3.2,4.5} steps[]={100,200,300} **If succeeded, need return an array of <tokens>elements**
Function definition	**public String getStepTariffToken(String meterNo, String Sgc, int tarrifIndex,int keyVersion, int keyExpiredTime, long keyNo, int seq,String activatingDate, int activatingModel, int validDate, int[] rates, int[] steps)** **{** **...** **}**

3.2.4.6 Generate Setup TOU Tariff Token

Functionality	To get the Setup TOU tariff Token			
Application	To set up TOU tariff			
Function name	getTOUTariffToken			
Parameter list	Parameter name	Type	Scope or length	Description
	meterNo.	**String**	**String of 12 numbers**	**Meterno.**
	Sgc	**String**	**String of 6 numbers**	**Supply group code**
	tariffIndex	**Int**	**1-99**	**Tariff index**
	keyVersion	**Int**	**1-9**	**Key version**
	keyExpiredTime	**Int**	**0-255**	**Key expire time**
	keyNo	**long**	**0-65535**	**Key Sequence**
	Seq	**int**	**1-255**	**Token Sequence**
	activatingDate	**String**	**YYYY-MM-DD**	**Active Date**
				Change Date type to String type：adapt to all kinds development languages

	activatingModel	Int	0-1 0：Normal 1：Immediately switch mode	Active Mode always 1.
	validate	Int	0-7	Effective Date
	rates	Int[]	Length 4 1-8191（scale&unit：0.01TK） By the integer bits and fractional bits, up to two decimal places, the maximum rate of price can be set to 81.91	Price
	times	int[]	Length 2 0-23	Hours period
Return value	Return XML String Xml format: <?xml version="1.0" encoding="UTF-8"?> <result> </result> Note： errorCode definition refer to chart 3. If succeeded, need return an array of <tokens>elements			

Function definition	public String getTOUTariffToken(String meterNo, String Sgc, int tarrifIndex,int keyVersion, int keyExpiredTime, long keyNo, int seq,String activatingDate, int activatingModel, int validDate, int[] rates, int[] times)
	{
	...
	}			

3.2.4.7 Generate Setup friendly mode Token

Functionality	To get the Setup Friendly Mode Token			
Application	To set up friendly mode			
Function name	getFriendModeToken			
Parameter list	Parameter name	Type	Scope or length	Description
	meterNo	String	String of 12 numbers	Meterno.
	Sgc	String	String of 6 numbers	Supply group code
	tariffIndex	int	1-99	Tariff index
	keyVersion	int	1-9	Key version

	keyExpiredTime	**int**	**0-255**	**Key expire time**
	keyNo	**long**	**0-65535**	**Key Sequence**
	seqNo	**int**	**1-255**	**Token Sequence**
	friendMode	**int**	**0-1** **0: friendly mode is enable** **1:friendly mode is closed**	**Friendly mode**
	Times	**int[]**	**0-23** **(array length :2)**	**Friendly time interval**
	Days	**int[]**	**0-6 means Saturdy, Friday, Thursday , Wednesday, Tuesday , Monday and Sunday in sequence.** **(array length :7)**	**Weekly holiday** Array value 0 means weekend and 1 means ordinary day
	N_of_allowable_days	**int**	**0-99**	**No of allowable days that friendly hour will work after that without vending meter will not work in friendly hour**
Return value	**Return XML String** **Xml format:** **<?xml version="1.0" encoding="UTF-8"?>** **<result>** **</result>** Note： **errorCode definition refer to chart 3.** **If succeeded, need return an array of <tokens>elements**			
Function definition	**public String getFriendModeToken(String meterNo, String Sgc, int tarrifIndex,** **int keyVersion, int keyExpiredTime , long keyNo, int seqNo, int friendMode, int[] times, int[] days)** **{** **...**			

	}

3.2.4.8 Generate Switch Meter Mode Token

Functionality	**To get Switch Meter Mode Token**			
Application	**To set up switch meter mode**			
Function name	getChangeMeterModeToken			
Parameter list	Parameter name	Type	Scope or length	Description
	meterNo	**String**	**String of 12 numbers**	**Meterno.**
	Sgc	**String**	**String of 6 numbers**	**Supply group code**
	tariffIndex	**int**	**1-99**	**Tariff index**
	keyVersion	**int**	**1-9**	**Key version**
	keyExpiredTime	**int**	**0-255**	**Key expire time**
	keyNo	**long**	**0-65535**	**Key Sequence**
	seqNo	**int**	**1-255**	**Token Sequence**
	mode	**int**	**0-1** **0:switch to the ordinary meter mode;** **1:switch to the Smart Pre-payment meter mode**	**Meter mode switch**
Return value	**Return XML String** **Xml format:** **<?xml version="1.0" encoding="UTF-8"?>** **<result>** **</result>** Note： **errorCode definition refer to chart 3.** **If succeeded, need return an array of <tokens>elements**			
Function definitio	**public String getChangeMeterModeToken(String meterNo, String Sgc,** **int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, int seqNo,** **int mode)** **{** **...** **}**			

3.2.4.9 Generate Set Credit Amount Limit And Overdraw Amount Limit Token

Functionality	To get set credit amount limit and overdraw Amount Limit Token			
Application	To set credit amount limit and overdraw Amount Limit .			
Function name	getSetCreditAmountLimitAndOverdrawAmountLimit			
Parameter list	Parameter name	Type	Scope or length	Description
	meterNo	String	String of 12 numbers	Meterno.
	Sgc	String	String of 6 numbers	Supply group code
	tariffIndex	Int	1-99	Tariff index
	keyVersion	Int	1-9	Key version
	keyExpiredTime	Int	0-255	Key expire time
	keyNo	Long	0-65535	Key Sequence
	seqNo	Int	1-255	Token Sequence
	amountType	Int	0-1 0: creditAmountLimit 1: overAmountLimit	Balance Type
	amountLimit	Int	0~99999999(scale&unit:0.01TK)	Amount
Return value	**Return XML String** **Xml format:** **<?xml version="1.0" encoding="UTF-8"?>** **<result>** **</result>** Note： **errorCode definition refer to chart 3.** **If succeeded, need return an array of <tokens>elements**			
Function definition	**public String getSetCreditAmountLimitOrOverdrawAmountLimitToken (** **String meterNo, String Sgc, int tarrifIndex, int keyVersion, int** **keyExpiredTime, long keyNo, int seqNo, int amountType, int amountLimit)** **{** **...** **}**			

3.2.4.10 Generate Logoff Token

Functionality	To get reset Token
Application	To reset meter
Function name	generateLogoffReturnToken

Parameter list	Parameter name	Type	Scope or length	Description
	meterNo	String	String of 12 numbers	Meterno.
	Sgc	String	String of 6 numbers	Supply group code
	tariffIndex	Int	1-99	Tariff index
	keyVersion	Int	1-9	Key version
	keyExpiredTime	Int	0-255	Key expire time
	keyNo	Long	0-65535	Key Sequence
	seqNo	Int	1-255	Token Sequence
Return value	Return XML String Xml format: <?xml version="1.0" encoding="UTF-8"?> <result> \</result> Note： errorCode definition refer to chart 3. If succeeded, need return an array of <tokens>elements			

Function definition	public String generateLogoffReturnToken (String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, int keyNo, int seqNo)
	
	{
	
	…
	
	}			

3.2.4.11 Generate Credit/ Management Return Token

Functionality	To get return Credit/Management Return Token			
Application	User should get the return token before credit Return ,and send the meter information to the electricity sale system, or else the electricity sale system will not sale electricity to user ,it will helpful for subsequent management 。			
Function name	resolveReturnToke			
Parameter list	Parameter name	Type	Scope or length	Description
	meterNo	String	String of 12 numbers	Meterno.

	Sgc	String	String of 6 numbers	SGCID	
	tariffIndex	int	1-99	Tariff index	
	keyVersion	int	1-9	Key version	
	keyExpiredTime	int	0-255	Key expire time	
	keyNo	long	0-65535	Key Sequence	
	Token	String	Custom defined by each manufacturers	Token encryption character String	
Return value	**Return XML String**				

Xml format:

<?xml version=*'1.0'* encoding=*'utf-8'*?>

<result>

</result>

Note:

If token resolve fail then return null.

Return returnTokens:

Parameter	Scope of Length	Description
Type	**0-1** **0:credit return token** **1:logoff return token**	
Balance		**Balance of meter**
Sequence	**0-1** **0:credit return token** **1:logoff return token**	**Sequence of meter**
clockSetFlag	**0-1**	**Clock set event**

		0:unhappen 1:happen	
	batteryVoltageLowFlag	0-1 0:unhappen 1:happen	Battery low voltage event
	openCoverFlag	0-1 0:unhappen 1:happen	Meter cover open event
	openBottomCoverFlag	0-1 0:unhappen 1:happen	Terminal cover open event
	byPassFlag	0-1 0:unhappen 1:happen	Bypass event
	reverseFlag	0-1 0:unhappen 1:happen	Reverse event
	magneticInterfereFlag	0-1 0:unhappen 1:happen	Magnetic interference event
	relayStatusFlag	0-1 0:connect 1:disconnect	Relay status
	relayFaultFlag	0-1 0:unhappen 1:happen	Relay fault event
	overdraftUsedFlag	0-1 0:no 1:yes	Emergency balance used or not
Function definition	**public String resolveReturnToken (String meterNo, String Sgc, int tarrifIndex, int keyVersion, int keyExpiredTime, long keyNo, String Token)** **{** **...** **}**		

3.2.5 Test Function Interface Define

Functionality	To get test Token			
Application	To manage the user meter test and display, call the function and generate the test token.			
Function name	**getTestToken**			
Parameter list	Parameter name	Type	Scope or length	Description
	manufacturingID	Int	2 numbers	Manufacturer code Hexing:14
	control	Int	0 : test all the contents 1 : test relay 2 : test LCD display 3 : teat total energy 4 : test max power limit 5 : display current meter status 6 : display current power 7 : display meter version number 8 : display current tariff unit price	Test token type

			9：display overload current limit 10: display credit numbers 11: display serial number of meter 12: display off numbers of relay 13: enter into accuracy test mode 18-36: save	155	
Return value	Return XML String Xml format: <?xml version="1.0" encoding="UTF-8"?> <result> </result> Note： errorCode definition refer to chart 3. If succeeded, need return an array of <tokens>elements				

Function definition	public String getTestToken (int manufacturingID, int control)
	{
	   …
	}				

4.6 The format of byte after decryption (Just for example)：

Data	Length	Address	Data Type	Is Encrypted	Desc
Answer To Reset	4	0			Answer To Reset
Binary Pattern	2	4			Fixed Data 0b1010110011110000 = 0xACF0
Version	1	6	BCD	N	Manufacturers
Meter ID	10	7	BCD	N	Meterno.
Consumer ID	10	17	BCD	N	A/C No.
Utility ID	2	27	BCD	N	Utility ID
Sanctioned Load	6	29	BCD	N	Sanctioned Load
Meter Type	1	35	HEX	N	Meter Type
Sanctioned Load exceeded	1	36	HEX	N	Sanctioned Load exceeded
Last Recharge Amount	2	37	HEX	N	Last Recharge Amount
Last Recharge Date	3	39	BCD	N	
Last Transaction ID	10	42	BCD	N	Last Transaction ID
Card Type	2	100	HEX	N	0ABC-Account Card，0BAC-Test Card B, 0AAC-Test Card A
Card Used Flag	1	102	Boolean	N	Token in the card has been processed flag. Upon completion of Token processing, write the results, and then update the flag FA. POS point writing Token set the flag FF
Token Total Number	1	103	HEX	N	Token Total Numbe
CS	2	104	HEX	N	Data sum check
	6	106		N	Blank Area:FF
Token 1	10	112	BCD	N	Token area, arranged in strict accordance with the required number in order of priority. No Token fill the whole area F
Token 2	10	122	BCD	N	
Token 3	10	132	BCD	N	
Token 4	10	142	BCD	N	
Token 5	10	152	BCD	N	
Token 6	10	162	BCD	N	
Token 7	10	172	BCD	N	
Token 8	10	182	BCD	N	
Token 9	10	192	BCD	N	
Token 10	10	202	BCD	N	
Token 11	10	212	BCD	N	
Token 12	10	222	BCD	N	
Token 13	10	232	BCD	N	
Token 14	10	242	BCD	N	
Token 15	10	252	BCD	N	
Token 16	10	262	BCD	N	
Token 17	10	272	BCD	N	
Token 18	10	282	BCD	N	
Token 19	10	292	BCD	N	
Token 20	10	302	BCD	N	
Token 21	10	312	BCD	N	
Token 22	10	322	BCD	N	
Token 23	10	332	BCD	N	

Data	Length	Address	Data Type	Is Encrypted	Desc
Token 24	10	342	BCD	N	
Token 25	10	352	BCD	N	
	6	362		N	
Meter ID	20	368	BCD	N	Meter ID
Consumer ID	20	388	BCD	N	Consumer ID
Utility ID	6	408	BCD	N	Utility ID
CS	2	414	HEX	N	
	0	416		N	
Data A	1	416	HEX	N	
Data B	1	417	HEX	N	
Data C	1	418	HEX	N	
Data D	1	419	HEX	N	
Data E	1	420	HEX	N	
Data F	1	421	HEX	N	
CS	2	422	HEX	N	
	0	424		N	
Token 1 Return Code	1	424	HEX	Y	Meter operating results after Token, 0x00: success, 0xFF: default value, the other: the error code.
Token 2 Return Code	1	425	HEX	Y	
Token 3 Return Code	1	426	HEX	Y	
Token 4 Return Code	1	427	HEX	Y	
Token 5 Return Code	1	428	HEX	Y	
Token 6 Return Code	1	429	HEX	Y	
Token 7 Return Code	1	430	HEX	Y	
Token 8 Return Code	1	431	HEX	Y	
Token 9 Return Code	1	432	HEX	Y	
Token 10 Return Code	1	433	HEX	Y	
Token 11 Return Code	1	434	HEX	Y	
Token 12 Return Code	1	435	HEX	Y	
Token 13 Return Code	1	436	HEX	Y	
Token 14 Return Code	1	437	HEX	Y	
Token 15 Return Code	1	438	HEX	Y	
Token 16 Return Code	1	439	HEX	Y	
Token 17 Return Code	1	440	HEX	Y	
Token 18 Return Code	1	441	HEX	Y	
Token 19 Return Code	1	442	HEX	Y	
Token 20 Return Code	1	443	HEX	Y	
Token 21 Return Code	1	444	HEX	Y	
Token 22 Return Code	1	445	HEX	Y	
Token 23 Return Code	1	446	HEX	Y	
Token 24 Return Code	1	447	HEX	Y	
Token 25 Return Code	1	448	HEX	Y	
Recharge Date&Time	6	449	HEX	Y	SSMMHHDDMMYY, Meter recharge time, Pre-payment System writes all F
Recharge Amount	4	455	HEX	Y	unit:0.01，The amount of recharge
Token Return Code CS	2	459	HEX	Y	
	3	461	HEX	Y	
Billing Date&Time	6	464	BCD	Y	SSMMHHDDMMYY
Active energy import (Current	4	470	BCD	Y	unit:0.01 kWh

Data	Length	Address	Data Type	Is Encrypted	Desc
Month)					
Taka Recharged(Current Month)	4	474	HEX	Y	Unit 0.01
Taka Used(Current Month)	4	478	HEX	Y	unit 0.01
Active Maximum Power（MD）	3	482	BCD	Y	Active Maximum Power（MD）
Reactive Maximum Power（MD）	3	485	BCD	Y	Reactive Maximum Power（MD）
Active energy import T1(Current Month)	4	488	BCD	Y	Active energy import T1(Current Month)
Active energy import T2(Current Month)	4	492	BCD	Y	Active energy import T2(Current Month)
Reactive energy import T1(Current Month)	4	496	BCD	Y	Reactive energy import T1(Current Month)
Reactive energy import T2(Current Month)	4	500	BCD	Y	Reactive energy import T2(Current Month)
Total Charge T1(Current Month）	4	504	HEX	Y	Unit:0.01
Total Charge T2(Current Month）	4	508	HEX	Y	unit:0.01
Number of Power Failures	2	512	HEX	Y	Number of Power Failures
Number of Sanctioned Load Exceeded	2	514	HEX	Y	Number of Sanctioned Load Exceeded
Month Average Power Factor	2	516	BCD	Y	
Last 1 Month CS	2	518	HEX	Y	
	0	520		Y	
Billing Date & Time	6	520	BCD	Y	SSMMHHDDMMYY
Active energy import (Current Month)	4	526	BCD	Y	unit:0.01 kWh
Taka Recharged(Current Month)	4	530	HEX	Y	Unit:0.01
Taka Used(Current Month)	4	534	HEX	Y	Unit:0.01
Active Maximum Power（MD）	3	538	BCD	Y	
Reactive Maximum Power（MD）	3	541	BCD	Y	
Active energy import T1(Current Month)	4	544	BCD	Y	
Active energy import T2(Current Month)	4	548	BCD	Y	
Reactive energy import T1(Current Month)	4	552	BCD	Y	
Reactive energy import T2(Current Month)	4	556	BCD	Y	
Total Charge T1(Current Month）	4	560	HEX	Y	Unit:0.01
Total Charge T2(Current Month）	4	564	HEX	Y	Unit:0.01
Number of Power Failures	2	568	HEX	Y	
Number of Sanctioned Load Exceeded	2	570	HEX	Y	
Month Average Power Factor	2	572	BCD	Y	
Last 2 Month CS	2	574	HEX	Y	
	0	576		Y	
Billing Date&Time	6	576	BCD	Y	SSMMHHDDMMYY
Active energy import (Current Month)	4	582	BCD	Y	unit:0.01 kWh
Taka Recharged(Current Month)	4	586	HEX	Y	Unit:0.01
Taka Used(Current Month)	4	590	HEX	Y	Unit:0.01
Active Maximum Power（MD）	3	594	BCD	Y	
Reactive Maximum Power（MD）	3	597	BCD	Y	

Data	Length	Address	Data Type	Is Encrypted	Desc
Active energy import T1(Current Month)	4	600	BCD	Y	
Active energy import T2(Current Month)	4	604	BCD	Y	
Reactive energy import T1(Current Month)	4	608	BCD	Y	
Reactive energy import T2(Current Month)	4	612	BCD	Y	
Total Charge T1(Current Month）	4	616	HEX	Y	Unit:0.01
Total Charge T2(Current Month）	4	620	HEX	Y	
Number of Power Failures	2	624	HEX	Y	
Number of Sanctioned Load Exceeded	2	626	HEX	Y	
Month Average Power Factor	2	628	BCD	Y	
Last 3 Month CS	2	630	HEX	Y	
	0	632		Y	
Billing Date&Time	6	632	BCD	Y	SSMMHHDDMMYY
Active energy import (Current Month)	4	638	BCD	Y	unit:0.01 kWh
Taka Recharged(Current Month)	4	642	HEX	Y	Unit:0.01
Taka Used(Current Month)	4	646	HEX	Y	Unit:0.01
Active Maximum Power（MD）	3	650	BCD	Y	
Reactive Maximum Power （MD）	3	653	BCD	Y	
Active energy import T1(Current Month)	4	656	BCD	Y	
Active energy import T2(Current Month)	4	660	BCD	Y	
Reactive energy import T1(Current Month)	4	664	BCD	Y	
Reactive energy import T2(Current Month)	4	668	BCD	Y	
Total Charge T1(Current Month）	4	672	HEX	Y	Unit:0.01
Total Charge T2(Current Month）	4	676	HEX	Y	Unit:0.01
Number of Power Failures	2	680	HEX	Y	
Number of Sanctioned Load Exceeded	2	682	HEX	Y	
Month Average Power Factor	2	684	BCD	Y	
Last 4 Month CS	2	686	HEX	Y	
	0	688		Y	
Billing Date&Time	6	688	BCD	Y	SSMMHHDDMMYY
Active energy import (Current Month)	4	694	BCD	Y	unit:0.01 kWh
Taka Recharged(Current Month)	4	698	HEX	Y	Unit:0.01
Taka Used(Current Month)	4	702	HEX	Y	Unit:0.01
Active Maximum Power（MD）	3	706	BCD	Y	
Reactive Maximum Power （MD）	3	709	BCD	Y	
Active energy import T1(Current Month)	4	712	BCD	Y	
Active energy import T2(Current Month)	4	716	BCD	Y	
Reactive energy import T1(Current Month)	4	720	BCD	Y	
Reactive energy import T2(Current Month)	4	724	BCD	Y	

Data	Length	Address	Data Type	Is Encrypted	Desc
Total Charge T1(Current Month）	4	728	HEX	Y	Unit:0.01
Total Charge T2(Current Month）	4	732	HEX	Y	Unit:0.01
Number of Power Failures	2	736	HEX	Y	
Number of Sanctioned Load Exceeded	2	738	HEX	Y	
Month Average Power Factor	2	740	BCD	Y	
Last 5 Month CS	2	742	HEX	Y	
	0	744		Y	
Billing Date&Time	6	744	BCD	Y	SSMMHHDDMMYY
Active energy import (Current Month)	4	750	BCD	Y	unit:0.01 kWh
Taka Recharged(Current Month)	4	754	HEX	Y	Unit:0.01
Taka Used(Current Month)	4	758	HEX	Y	Unit:0.01
Active Maximum Power（MD）	3	762	BCD	Y	
Reactive Maximum Power（MD）	3	765	BCD	Y	
Active energy import T1(Current Month)	4	768	BCD	Y	
Active energy import T2(Current Month)	4	772	BCD	Y	
Reactive energy import T1(Current Month)	4	776	BCD	Y	
Reactive energy import T2(Current Month)	4	780	BCD	Y	
Total Charge T1(Current Month）	4	784	HEX	Y	Unit:0.01
Total Charge T2(Current Month）	4	788	HEX	Y	Unit:0.01
Number of Power Failures	2	792	HEX	Y	
Number of Sanctioned Load Exceeded	2	794	HEX	Y	
Month Average Power Factor	2	796	BCD	Y	
Last 6 Month CS	2	798	HEX	Y	
	0	800		Y	
Numbers of open cover	2	800	HEX	Y	
The last time of open cover	6	802	BCD	Y	SSMMHHDDMMYY
The last 2 time of open cover	6	808	BCD	Y	
The last 3 time of open cover	6	814	BCD	Y	
The last 4 time of open cover	6	820	BCD	Y	
Numbers of open cover CS	2	826	HEX	Y	
	4	828		Y	
Numbers of open terminal cover	2	832	HEX	Y	
The last time of open terminal cover	6	834	BCD	Y	
The last 2 time of open terminal cover	6	840	BCD	Y	
The last 3 time of open terminal cover	6	846	BCD	Y	
The last 4 time of open terminal cover	6	852	BCD	Y	
Numbers of open terminal cover CS	2	858	HEX	Y	
	4	860		Y	
Numbers of bypass	2	864	HEX	Y	
The last time of bypass	6	866	BCD	Y	

Data	Length	Address	Data Type	Is Encrypted	Desc
The last 2 time of bypass	6	872	BCD	Y	
The last 3 time of bypass	6	878	BCD	Y	
The last 4 time of bypass	6	884	BCD	Y	
Numbers of bypass CS	2	890	HEX	Y	
	4	892		Y	
Numbers of overload	2	896	HEX	Y	
The last time of overload	6	898	BCD	Y	
The last 2 time of overload	6	904	BCD	Y	
The last 3 time of overload	6	910	BCD	Y	
The last 4 time of overload	6	916	BCD	Y	
Numbers of overload CS	2	922	HEX	Y	
	4	924		Y	
Numbers of missing neutral event	2	928	HEX	Y	
The last time of missing neutral event	6	930	BCD	Y	
The last 2 time of missing neutral event	6	936	BCD	Y	
The last 3 time of missing neutral event	6	942	BCD	Y	
The last 4 time of missing neutral event	6	948	BCD	Y	
Missing neutral event CS	2	954	HEX	Y	
	4	956		Y	
Last Read Time	6	960	BCD	N	POS needs to reset the data after read the date,set all F
Return Token	10	966	BCD	N	POS needs to reset the tokens，set all F
Update Flag	1	976	Boolean	N	The meter is updated to return data, FF-no, FA-updated. POS card is required to write the flag is after read the data
CS	2	977	HEX	N	
Verify Writable	1	1020	HEX		PSC used to check the password is corrected
Error Counter	1	1021			Card Reserved fields
PSC	2	1022			Card Reserved fields

5 GPRS Meters Connection Platform Design

5.1Concept Description of MIC Communication Access

Smart GPRS meters communicate with MIC using XML format based on TCP. It will use encryption and digital signature technical in TCP linker layer, and in data area of XML document, follow the standard DLMS protocol.
XML Communication Protocol Define
XML Format Define
<?xml version='1.0'?>
<h:rt xmlns h='ProtocolHead'>
<h:pv>1</h:pv>
<h:addr>030140000170</h:addr>
<h:dir>down</h:dir>
<h:pt>1</h:pt>
<h:fc>3</h:fc>
<h:seq>7</h:seq>
<h:e>10</h:e>
<h:a>0</h:a>
<h:r>485845110000000000000007</h:r>< h:d>
0A15CEDF16........................0A15CEDF16
</h:d>
<h:sg>0203<h:sg>
</h:rt>

XML Label Description：

All data of XML should be transferred using ASCII code.

Protocol Presentation	Protocol Description	Note
<? xml version='1.0' ?>	XMLfixed head format	
<h:rt xmlns h='ProtocolHead'>	To name the space under root element.Protocol Head means the first layer of protocol.	
<h:pv>1</ h:pv>	XMLprotocol internal version number of company. 1: the first version	
<h:f>100000000</h:f>	Address of transmit end，the label means which transmit end the data come from. The address will be 1 if the transmit end is master station; The address will be meter address if the transmit end is meter, whose length is not fixed and the max length is 32 pcs ASCII code.	
<h:dir>down</h:dir>	The direction of transmission. up: meter to server down: server to meter	
<h:pt>1</h:pt >	Data transport protocol in data area. 1：DLMS transport protocol 2: XML transport protocol（Company will develop in the future, as the second stage）	
<h:fc>1</h:fc>	Function code: it is mainly for front-end processor distinguishes the data types. When front-end processor doesn't analysis the data or decrypt the encrypted data, it can response the frame transmitted from the meters. At the same time, the label can distinguish who is the transmit end. 1：Link interface test(meter launches) 2：Link interface test response frame(master station responses) 3：Request – response frame （master station responses） 4：Request —confirm/deny frame （master station responses） 5：Report initially- confirm/deny frame （meter launches） 6：Report initially confirm frame needed （meter launches）	

	7：Report initially confirm frame needless（meter launches）
	8：business password refresh（master station launches）
	9：manufacturer request（mainly for upgrade remotely）（master station launches）
	10：manufacturer respond（mainly for upgrade remotely））（master station launches）
<h:seq>3< h:seq>	XML frame serial number, for defining which response frame was responded by the response end. The frame serial number is changed by primary end, it will add 1 when primary end launches one frame of message. The range of variationcan be0-99. Driven end regards the frame serial number of primary end as the response frame serial number.
	After messages transmitted by starting end, when the responded can't be received timely , the serial number of retransmission will be same if the starting end allows retransmission, and the max retransmission numbers is 3;
	2） If the driven end receives two starting frame with the same serial number in series, it means the response hasn't been received yet, then retransmission(and without dealing with the message again);
	3）If starting end receives two response frames with the same serial number in series, then will not deal with the second response frame.
<h:e>10</h:e>	Data encryption algorithm
	00：without using encryption algorithm
	，data transmitted using plaintext form
	10：AES-128 In GCM Mode
	11：AES-192
	12：AES-256
	20：DES
	30：SHA
	40：ECC
<h:a>1</h:a>	Verify algorithm
	0：without using verify
	1：SHA-256
<h:r>4827762</h:r>	Random number. The starting end will regard the random number as vector to encrypt the data area, the receiving end will regard the random number as vector to decrypt the data area. It has 12 bytes, as 24 bytes HEX character String in XML.
<h:d >123456< /h:d >	Data area, if without using encryption algorithm, the flag is plaintext ; if using encryption algorithm, the flag is the plaintext will be encrypted.
<h:sg>0203<h:sg>	When without using verify, the flag is useless; when using verify, the flag is verify code for plaintext of data area.
</h:rt>	XML end flag.

Link interface test: the function is distinguished in data area.

01：log in

02：quit

03：heartbeat

Link interface test response frame: the function is distinguished in data area.

01：log in

02：quit

03：heartbeat

In this system, meters as client side, MIC as server side, link build , log in request and heatbeat are transmitted by meters , and responded by MIC.

Log in frame: For transmitting a group of specific data to the MIC and confirming the link chaining relationship with master station , after meters connected with master station in TCP/IP.

Heartbeat frame: For transmitting a group of data to maintain the TCP/IP link chaining.
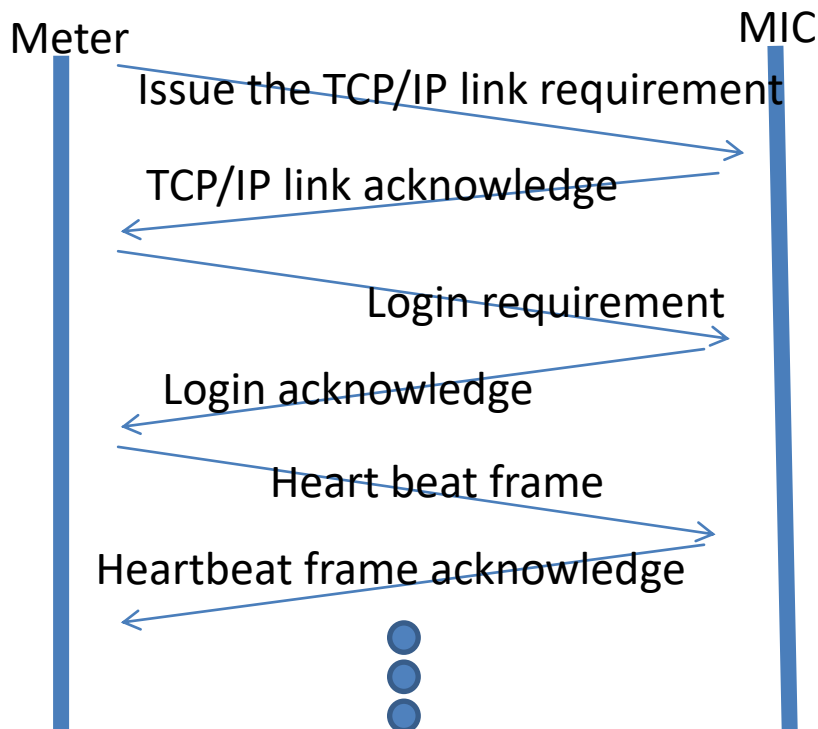
Request – response frame

Request – response frame is the request frame transmitted from master station and the response frame responded by meters.

The correct response means in XML layers, encryption and decryption runs correct or other data to be tested are correct, without including part or all deny for DLMS frames in DLMS layers.

Request- confirm\deny frame

Request- confirm\deny frame is the deny frame responded to the master station when errors happened on data that meters transmitted to the master station.

It will response confirm frame if the update key request to master station is correct.

Request- confirm\deny frame format：

Confirm frame	Function code:00	
Deny frame	Function code :01	Error code：01: password error; 02: verify error;03: other error

Report initially-confirm\deny frame

For data meters transmitted to the master station , if need confirmation, front-end processor will using the function code to achieve confirmation and deny for meters.

The format refers to function code 3.

Report initially -confirm frame needed

For data meters reported to the master station initially, if need confirmed , sent according to the function code.

Report initially -confirm frame needless

For data meters reported to the master station initially, if confirmed needless , sent according to the function code.

Business password updated

To update the business password according to the function , sent by master station , encrypted by root key.

Manufacturer request

For self defined commands send from master station to the manufacturers.

Manufacturer response

For self defined commands responded from meters to the manufacturers.

It adopts plaintext transmission mode for data areas of function code 1,2,4,5.

Further information please check<The process of online meter communication >