



Call-Off Contract NO. (67/2017)

Two years call - off contract for supply of

- (400V L-L), Three Phase Electronic Meter, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 4-wire C.T operated.
- (110 V L-L), Three Phase Electronic Meter, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 3-wire C.T V.T operated.
- Modem with automatic switching between 2/3/4G.

Tenderer:

- Name:
- Address:
- Telephone / Cellular:
- Fax:
- Website:
- E-Mail:
- Contact Person:

Tender Document Cost = 60 JD.



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Invitation to Call - Off Contract NO. (67/2017)

Dear Sir;

You are kindly requested to tender for the supply of the below mentioned materials as per the quantities and technical specifications enclosed herewith on call-off basis for a period of two (2) years by filling in the schedules, signing the form of tender, and forward the complete tender documents to the attention of IDECO general manager addressed as seen on the cover page, to be received not later than 2 pm (local time) due **July 26, 2017**.

All bids must be accompanied with a Bid Bond of not less than 5% of the highest alternative offered price valid for 120 days from the closing date, otherwise your tender will not be considered.

The tender shall be submitted in three separated envelopes, one for technical offer, one for commercial offer, and one for the bid bond. The three envelopes shall be contained in a sealed envelope or archive box, and the contractor shall write the tender number and his contact information on each envelope and deliver the offer to tenders secretary office located in financial department – general manager building not later than 2 pm (local time) due **July 26, 2017.**

Table 2

| Item No. | Quantity (PCS) | Material Description | Stock Code |
|----------|----------------|---|------------|
| 1 | 2000 | (400V L-L), Three Phase Electronic Meter, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 4-Wire C.T Operated. | 6625-2157 |
| 2 | 200 | (110 V L-L), Three Phase Electronic Meter, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 3-Wire C.T V.T Operated. | 6625-2162 |
| 3 | 2200 | Modem With Automatic Switching Between 2/3/4G. | 6625-4110 |

GENERAL CONDITIONS

1. Preamble

1.1. These General Conditions shall apply, save as varied by express agreement accepted in writing by both parties.

1.2. Definition of Terms:

The "**Purchaser**" shall mean "Irbid District Electricity Co. Ltd." Hereinafter called "IDECO", and shall include IDECO's legal personal representatives and duly appointed engineers. The "**Engineer**" shall mean "Irbid District Electricity Co." Engineers or persons for the time being or from time to time duly appointed in writing by the purchaser to act as Engineer or the purpose of the contract.

The words "approved" and "approval" where used in these conditions or in the specification shall mean "approved by" and "approval of" the purchaser respectively. The "Vendor" shall mean the "Contractor" who's tender has been accepted by the purchaser and shall include the Vendor's. (Contractor's) legal personal representatives, successors and permitted assigns, "**F.O.B. Price**" shall mean the cost of the equipment delivered free on board the ship or truck or aircraft, all port charges and handling charges (also heavy lift if applicable) included .

The contractor must insure the material against all risks from the time it leaves the works until it is placed "F.O.B". "C&F price" shall mean F.O.B. price plus freight including unloading at the port of destination. All Marine Insurance will be affected by the purchaser. The contractor must provide full details of the material to be shipped in good time for IDECO to arrange for Marine Insurance before the material is actually shipped.

"The call - off purchase order "means formal request for delivery to be issued by IDECO specifying equipment to be supplied, delivered, and tested by the contractor upon request by IDECO.

"Parties" means IDECO and contractor / vendor.

2. IDECO will sign a Framework Agreement with successful supplier which governs the relationship between the company and the supplier, and upon signing the agreement. The supplier should submit a design package for each awarded type, in addition a milestone table to be established to determine the durations of supply activities ; i.e : design submittal, FAT advanced notice, release of shipment, ETC; where each purchase order date should be considered as the initial milestone date.

3. Formation of call - off Contract

3.1. **The contract shall enter into force upon the date of awarding (hereinafter referred to as the "Effective Date") and shall be valid for 2 years thereafter and until the parties fulfill all their obligations hereunder.**

3.2. **IDECO has a right during the agreement validity to amend the contract up to extra one year.**

3.3. **The contract is not a commitment to purchase by the buyer. Commitment to purchase will only be made when IDECO issues an official purchase order under the terms of the agreement.**

- 3.4. The call off contract shall remain valid for on – call delivery for a period of two years from the date of signing the contract (agreement), and/or the expiration of the total contract quantity, whichever first occurs.**
- 3.5. The required materials under this contract shall be required partially in accordance with number of call-off purchase orders during agreement validity for on-call delivery for a period of two years from the date signing agreement, and/or the expiration of the total contract quantity, whichever first occurs.**
- 3.6. Notwithstanding that the contract and correspondence in connection with the contract shall be in the English language, the contract shall be and be deemed to be a Jordan contract and shall accordingly be governed by and construed according to the laws for the time being in force in the Hashemite Kingdom of Jordan.**
- 3.7. Power to Vary The Work:** alternations, amendments, omissions, additions, suspensions, or variations of the work, (hereinafter referred to as "variations") under the contract as shown by the contract drawings or the specification shall be made by the contractor except as directed in writing by the purchaser, but the purchaser shall have full power, subject to the provision hereinafter contained, from time to time during the execution of the contract by notice in writing to instruct the contractor to make such variation without prejudice to the contract and the contractor shall carry out such variations, and be bound by the same conditions, as far as applicable, as though the said variations occurred in the specification. If any suggested variations would, in the opinion of the contractor, if carried out, prevent him fulfilling any of his obligations or guarantees under the contract, he shall notify the purchaser thereof in writing, and the purchaser shall decide forthwith whether or not the same shall be carried out, and if the purchaser confirms his instructions, the contractor's obligations and guarantee shall be modified to such an extent as may be justified. The difference in cost, if any, occasioned by any such variations, shall be added to or deducted from the contract price as the case may require. The amount of such difference, if any, shall be ascertained and determined in accordance with the rates specified in the schedule of prices so far as the same may be applicable, and where the rates are not contained in the said Schedule, or are not applicable they shall be settled by the purchaser and the contractor jointly. But the purchaser shall not become liable for the payment of any charge in respect of any such variations, unless the instruction for the performance of the same shall have been given in writing by him. In the event of the purchaser requiring any variation, such reasonable a proper notice shall be given to the contractor as will enable him to make his arrangements accordingly, and in cases where goods or materials are already prepared, or any designs, drawings, or patterns made or work done that requires to be altered a reasonable sum in respect thereof shall be allowed by the purchaser. Provided that no such variations shall, except with consent in writing of the contractor, be such as will involve an increase or decrease of the total price payable under the contract by more than 25 percent thereof. The power given to the purchaser to make any alteration, amendment, omission, addition or variation to, from or in any part of the works shall include power to vary from time to time the date for the completion of the works or any part thereof.
- 3.8. IDECO shall have the absolute right during the validity of the contract up to the last delivery to increase or decrease the quantity of the items or not to order some items in such manner that does not exceed 25% of the total contract value.**
- 3.9. IDECO has a complete right not to award all items under this contract to one supplier,**

partial awarding per item or per quantity for a single item might be applicable and the suppliers do not have the right to object.

3.10. IDECO has a complete right to substitute certain items instead of other items by increasing or decreasing the required quantity in purchase order.

3.11. Precedence: In the event of any discrepancy or contradiction between the provisions of the conditions of contract and of the specification, the conditions of contract shall take precedence.

4. Drawings and Descriptive Documents

4.1. The weights, dimensions, capacities, prices, performance rating and other data included in catalogues, prospectuses, circulars, advertisement, illustrated matter and price lists constitute an approximate guide. These data shall not be binding save to the extent that they are by reference expressly included in the contract.

4.2. Any drawings or technical documents intended for use in the construction of the material or of part thereof and submitted to the purchaser prior or subsequent to the formation of the contract remain the exclusive property of the Vendor. They may not, without the Vendor's consent, be utilized by the purchaser or copied, reproduced, transmitted or communicated to a third party. Provided, however, that the said plans and documents shall be the property of the purchaser.

14.1 If it is expressly so agreed, or

24.1 If they are referable to a separate preliminary development contract on which no actual construction was to be performed and in which the property of the Vendor in the said plans and documents was not reserved.

4.3. Any drawings or technical documents intended for use in the construction of the material or of part thereof and submitted to the Vendor by the Purchaser prior or subsequent to the formation of the contract remain the exclusive property of the Purchaser. They may not, without his consent be utilized by the Vendor or copied, reproduced, transmitted or communicated to a third party.

4.4. The Vendor shall, if required by the purchaser, furnish free of charge to the purchaser at the commencement of the Guarantee Period, as defined in clause 9, information and drawings other than manufacturing drawings of the material in sufficient detail to enable the purchaser to carry out the erection, commissioning, operation and maintenance (including running repairs) of all parts of the material. Such information and drawings shall be the property of the purchaser and the restrictions on their use set out in paragraph 2 hereof shall not apply thereto. Provided that if the Vendor so stipulates, they shall remain confidential.

5. Materials Packing and Shipping Marks

All materials, equipment and goods shall be very well packed, in seaworthy containers and/or wooden cases, etc. These should protect the material during shipping, handling, unloading, and for a reasonable period of storage at Aqaba and latter storage at IDECO stores. Packing for indoor materials should be done in such manner as to adequately ensure no ingress of moisture during the shipping and storage periods. Packing of fragile equipment (e.g. including instruments and porcelain) should be done in a way which ensures a reasonable resistance to impact breakage during transport. Packing shall in general be adequate and in compliance with the best international practice. A descriptive and fully itemized list shall be

prepared for the contents of each packing case. A copy of this list shall be placed in a waterproof envelope under a metal or other suitable plate securely fastened to the outside of one end of the case. And its position adequately indicated by stenciling on the case. Where appropriate drawing showing the erection marking of the items concerned shall be placed inside the case, IDECO will supply the successful tenderer with a drawing of its shipping mark for utilization. All packing cases, crates, barrels and drums shall remain the property of the purchaser.

6. Inspection and Testing

- 6.1.** If expressly agreed in the contract, the purchaser shall be entitled to have the quality of the materials used and the parts of the instruments, both during manufacture and when completed, inspected and checked by his authorized representatives. Such inspection and checking shall be carried out at the place of manufacture during normal working hours after agreement with the Vendor as to date and time.
- 6.2.** If as a result of such inspection and checking the purchaser shall be of the opinion that any materials or parts are defective or not in accordance with the contract, he shall state in writing his objections and the reasons therefore.
- 6.3. TESTS:** Acceptance tests will be carried out and, unless otherwise agreed, will be made at the Vendor's works and during normal working hours. If the technical requirements of the tests are not specified in the contract, the tests will be carried out in accordance with the general practice obtaining in the appropriate branch of the industry in the country where the material is manufactured.
- 6.4.** The Vendor shall give to the purchaser sufficient notice of the tests to permit the purchaser's representatives to attend. If the purchaser is not represented at the tests, the tests report shall be communicated by the Vendor to the purchaser and shall be accepted as accurate by the purchaser.
- 6.5.** If on any test (other than a test site, where test on site are provided for in the contract) the material shall be found to be defective or not in accordance with the contract, the Vendor shall with all speed make good the defect or ensure that the plant complies with the contract. Thereafter, if the purchaser so requires, the test shall be repeated.
- 6.6.** Unless otherwise agreed, the Vendor shall bear all the expenses of tests carried out in his works.
- 6.7.** If the contract provides for tests on site, the terms and conditions governing such tests shall be such as may be specially agreed between the parties.

7. Passing of Risk

Save as provided in paragraph 7.6, the time at which the risk shall pass shall be fixed in accordance with the International Rules for the Interpretation of Trade Terms (Incoterms) of the International Chamber of Commerce in force at the date of the formation of the contract.

- 8. Delivery:** Unless otherwise agreed the delivery period shall run from the date of the formation of the contract as defined in clause 2.
- 8.1.** Should delay in delivery be caused by any of the circumstances mentioned in clause 10 or

by an act or omission of the purchaser and whether such cause occur before or after the time or extended time for delivery, there shall be granted subject to the provisions of paragraph 5 hereof such extension of the delivery period as is reasonable having regard to all the circumstances of the case.

- 8.2.** If a fixed time for delivery is provided for in the contract and the Vendor fails to deliver within such time or any extension thereof granted under paragraph 2 hereof, the purchaser shall be entitled, on giving to the Vendor within a reasonable time notice in writing, to claim a deduction of the price payable under the contract. Such deduction shall be calculated at the rate of **one half of one percent** of that part of the price payable under the contract which is properly attributable to such portion of the plant as cannot in consequence of the said failure be put to the use intended for each complete week of delay commencing on the due date of delivery, **but shall not exceed a maximum percentage deduction of ten percent from the purchase order value**, Such deduction shall be allowed when a payment becomes due on or after delivery. Save as provided in paragraph 5 hereof, such deduction of price shall be to the exclusion of any other remedy of the purchaser in respect of the Vendor's failure to deliver as aforesaid.
- 8.3.** If the time for delivery mentioned in the contract is an estimate only, either party may after the expiration of two thirds of such estimated time require the other party in writing to agree a fixed time. Where no time for delivery is mentioned in the contract, this course shall be open to either party after the expiration of six months from the formation of the contract. If in either case the parties fail to agree, either party may have recourse to arbitration, in accordance with the provisions of clause 13, to determine a reasonable time for delivery and the time so determined shall be deemed to be the fixed time for delivery provided for in the contract and paragraph 3 hereof shall apply accordingly.
- 8.4.** If any portion of material in respect of which the purchaser has become entitled to the maximum deduction provided for by paragraph 3 hereof, or in respect of which he would have been so entitled had he given the notice referred to therein, remains undelivered, the purchaser may by notice in writing to the Vendor require him to deliver and by such last mentioned notice fix a final time for delivery which shall be reasonable taking into account such delay as has already occurred. If for any reason whatever the Vendor fails within such time to do everything that he must do to effect delivery, the purchaser shall be entitled by notice in writing to the Vendor, and without requiring the consent of any court, to terminate the contract in respect of such portion of the material and thereupon to recover from the Vendor any amount not exceeding that part of the price payable under the Contract which is properly attributable to such portion of the material as could not in consequence of the Vendor's failure be put to the use intended.
- 8.5.** If the purchaser fails to accept delivery on due date, he shall nevertheless make any payment conditional on delivery as if the material had been delivered. The Vendor shall arrange for the storage of the material at the risk and cost of the purchaser. If required by the purchaser, the Vendor shall insure the material at the cost of the purchaser. Provided that if the delay in accepting delivery is due to one of the circumstances mentioned in clause 10 and the Vendor is in a position to store it in his premises without prejudice to his business, the cost of storing the material shall not be borne by the purchaser.
- 8.6.** Unless the failure of the purchaser is due to any of the circumstances mentioned in clause 10, the Vendor may require the purchaser by notice in writing to accept delivery within reasonable time. If the purchaser fails for any reason whatever to do so within such time,

the Vendor shall be entitled by notice in writing to the purchaser, and without requiring the consent of any court, to terminate the contract in respect of such portion of the material as is by reason of the failure of the purchaser aforesaid not delivered and thereupon to recover from the purchaser any loss, suffered by reason of such failure up to an amount not exceeding the value of the material, the delivery of which has not been accepted.

9. Force Majeure

9.1. Notwithstanding the provisions of causes 7, 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.

9.2. For purposes of this clause, "Force Majeure" means an event beyond the control the supplier not involving the supplier's fault or negligence. Such events may include, but are not restricted to, acts to the purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and fright embargoes.

9.3. If a Force Majeure situation arises, the supplier shall promptly notify the purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall all reasonable alternative means for performance not prevented by the Force Majeure event.

9.4. Payment:

9.4.1 Terms of Payment:

1. The company prefers to deal with the supplier on an open account basis, and the payment to be made for each purchase order as the following:

- a. The supplier has to send the following documents: (Invoice origin + five copies), (Certificate of origin + five copies), (Bill of lading 3-negotiable + 5 non-negotiable), (Test certificate (where applicable) + 6 copies), to IDECO company/ financial department, and those documents shall be legalized for shipping purposes.**
- b. 100% of Payment will be released within 2 weeks after the receipt of goods and acceptance at IDECO stores.**

2. In case the supplier insists on L/C as a method of payment, all /LC charges will be borne by the supplier and charge to his own account for each purchase order and the terms will be as follows:

- a. The L/C will be confirmed and irrevocable but has to be acceptance L/C and the supplier has to send the following documents: (Invoice origin + five copies), (Certificate of origin + five copies), (Bill of lading 3-negotiable + 5 non-negotiable), (Test certificate (where applicable) + 6 copies), and those documents shall be legalized for shipping purposes.**
- b. 100% of Payment will be released after submitting IDECO's acceptance certificate to the bank within 2 weeks after receipt of goods at IDECO's stores.**

9.4.2 Currency of Payment: The contract price will normally be paid in the currency or currencies in which the price has been stated. The purchaser, however, reserves the

right to make payments in the currencies of the countries of origin of goods and services at the exchange rates applicable at the time of payment of the contract price.

9.4.3 Any advance payments made by the purchaser are payments on account and do not constitute a deposit, the abandonment of which would entitle either party to terminate the contract.

9.4.4 If delivery has been made before payment of the whole sum payable under the contract, material delivered shall, to the extent permitted by the law of the country where the plant is situated after delivery, remain the property of the Vendor until such payment has been effected. If such law does not permit the Vendor to retain the property in the material, the Vendor shall be entitled to the benefit of such other rights in respect thereof as such law permits him to retain. The purchaser shall give the Vendor any assistance in taking any measures required to protect the Vendor's right of proper or such other rights as aforesaid.

9.4.5 A payment conditional on the fulfillment of an obligation by the Vendor shall not be due until such obligation has been fulfilled, unless the failure of the purchaser is due to an act or omission of the purchaser.

9.4.6 If the purchaser delays in making any payment, the Vendor may postpone the fulfillment of his own obligations until such payment is made, unless the failure of the purchaser is due to an act or omission of the Vendor.

9.4.7 If delay by the purchaser in making any payment is due to one of the circumstances mentioned in clause 10, the Vendor shall not be entitled to any interest on the sum due.

9.4.8 Save as aforesaid, if the purchaser delays in making any payment, the Vendor shall on giving to purchaser within a reasonable time notice in writing be entitled, and without requiring the consent of any court, to terminate the contract and thereupon to recover from the purchaser the amount of his loss up to the value of the material, the payment for which has been unreasonably delayed.

10. Guarantee:

10.1. Subject as hereinafter set out; the Vendor undertakes to remedy any defect resulting from faulty design, materials or workmanship.

10.2. This liability is limited to defects which appear during the period (hereinafter called the Guarantee Period) of fifteen months from date of dispatch ex-works or twelve months from the date of setting to work whichever shall be the later.

10.3. In fixing this period due account has been taken of the time normally required for transport as contemplated in the contract.

10.4. In respect of such parts (whether of the Vendor's own manufacture or not) of the material as are expressly mentioned in the contract, the Guarantee Period shall be such other period (if any) as is specified in respect of each of such parts.

- 10.5.**The Guarantee period shall start from the later of the dates mentioned in paragraph 2 above. If however dispatch ex-works is delayed for a period in excess of three months due to a cause beyond the control of the Vendor the Guarantee Period shall not extend beyond eighteen month from the date the material was ready for dispatch ex-works.
- 10.6.**The Guarantee period is based on the continuous use of the material in service for 24 hours every day.
- 10.7.**A fresh Guarantee Period equal to that stated in paragraph 2 hereof shall apply, under the same terms and conditions as those applicable to the original material, to parts supplied in replacement of defective parts or to parts renewed in pursuance of this clause. This provision shall not apply to the remaining parts of material, the Guarantee Period of which shall be extended only by a period equal to the period during which the material is out of action as result of a defect covered by this clause.
- 10.8.**In order to be able to avail himself of his rights under this clause the purchaser shall notify the Vendor in writing without delay of any defects that have appeared and shall give him every opportunity of inspecting and remedying them.
- 10.9.**On receipt of such notification the Vendor shall remedy the defect forthwith and at his own expense. Save where the nature of the defect is such that it is appropriate to effect repairs on site, the purchaser shall return to the Vendor any part in which a defect covered by this clause has appeared, for repair or replacement by the Vendor, and in such case the delivery to the purchaser of such part properly repaired or a part in replacement thereof shall be deemed to be a fulfillment by the Vendor of his obligations under this paragraph in respect of such defective part.
- 10.10.**The Vendor shall bear all the costs and risks of the transport of defective parts or equipment and their replacements.
- 10.11.**Where, in pursuance of paragraph 9 hereof, repairs are required to be effected on site, the conditions covering the attendance of the Vendor's representatives on site shall be such as may be specially agreed between the parties.
- 10.12.**Defective parts replaced according to this clause shall be placed at the disposal of the Vendor.
- 10.13.**If the Vendor refuses to fulfill his obligations under this clause or fails to proceed with due diligence after being required so to do, the purchaser may proceed to do the necessary work at the Vendor's risk and expense, provided that he does so in a reasonable manner.
- 10.14.**The Vendor's liability does not apply to defects arising out of materials provided, or out of a design stipulated, by the purchaser.
- 10.15.**The Vendor's liability shall apply only to defect that appears under the conditions of operation provided for by the contract and under proper use. It does not cover defects due to causes arising after the risk in the material has passed in accordance with clause 6. In particular it does not cover defects arising from the purchaser's faulty maintenance or erection, or from alterations carried out without the Vendor's consent in writing, or from repairs carried out improperly by the purchaser, nor does it cover normal deterioration.

- 10.16.** Save as in this clause expresses, the Vendor shall be under no liability in respect of defects after the risk in the material has passed in accordance with clause 6, even if such defects are due to causes existing before the risk so passed. It is expressly agreed that the purchaser shall have no claim in respect of personal injury or of damage to property not the subject matter of the contract or of loss of profit unless it is shown from the circumstances of the case that the Vendor has been guilty of gross misconduct.
- 10.17.** The vendor is required to transport all the defective or not in accordance materials, from our stores within a month from date of notification. All costs and expenses of transportation shall be borne by the vendor. Unless otherwise agreed. IDECO has the right to deal with the defective materials in a proper way.
- 10.18.** Gross misconduct "does not comprise any and every lack of proper care or skill, but means an act or omission on the part of the Vendor implying either a failure to pay due regard to serious consequences which a conscientious contractor would normally foresee as likely to ensue, or a deliberate disregard of any consequences of such act or omission.

11. Relief:

- 11.1 The following shall be considered as cases of relief if they intervene after the formation of the contract and impede its performance: industrial disputes, and any other circumstances (e.g. fire, mobilization, requisition, embargo, currency restrictions, insurrection, shortage of transport, general shortage of materials and restrictions in the use of power) when such other circumstances are beyond the control of the parties.
- 11.2 The party wishing to claim relief by reason of any of the said circumstances shall notify the other party in writing without delay on the intervention and on the cessation thereof.
- 11.3 The effects of the said circumstances so far as they affect the timely performance of their obligation by the parties, are defined in clauses 7 and 8. Save as provided in paragraph 7.5, 7.7, and 8.7, if by reason of any of the said circumstances, the performance of the contract within a reasonable time becomes impossible, either party shall be entitled to terminate the contract by notice in writing to the other part without requiring the consent of any court.
- 11.4 If the contract is terminated in accordance with paragraph 3 hereof, the division of the expenses incurred in respect of the contract shall be determined by agreement between the parties.
- 11.5 In default of agreement it shall be determined by the arbitrator which party has been prevented from performing his obligations and that party shall bear the whole of the said expenses. Where the purchaser is required to bear the whole of the expenses and has before termination of the contract paid to the Vendor more than the amount of the Vendor's expenses, the purchaser shall be entitled to recover the excess. If the arbitrator determines that both parties have been prevented from performing their obligation, he shall apportion the said expenses between the parties in such manner as to him seems fair and reasonable, having regard to all the circumstances of the case.
- 11.6 For the purposes of this clause "expenses" means actual out of pocket expenses reasonably incurred, after both parties shall have mitigated their losses as far as possible. Provided that

as respects material delivered to the purchaser the Vendor's expenses shall be deemed to be that part of the price payable under the contract which is properly attributable thereto.

12. Limitation of Damages:

12.1. Where either party is liable in damages to the other these shall not exceed the damage which the party in default could reasonably have foreseen at the time of the formation of the contract.

12.2. The party who sets up a breach of the contract shall be under a duty to take all necessary measures to mitigate the loss which has occurred provided that he can do so without unreasonable inconvenience or cost. Should he fail to do so, the party guilty of the breach may claim a reduction in the damages.

13. Rights at Termination: Termination of the contract from whatever cause arising shall be without prejudice to the rights of the parties accrued under the contract up to the time of termination.

14. Arbitration and Law Applicable:

14.1 Any dispute, question or controversy shall arise between the purchaser and the contractor concerning this contract the matter in dispute shall be referred to an arbitration committee composed of three (3) arbitrators. One arbitrator shall be nominated by the purchaser and one by the contractor, and the third arbitrator shall be appointed by both parties. If either party fails to appoint his arbitrator within one month of the appointment of the arbitrator by the other party, or if the two parties fail to agree on the third arbitrator within two months of the date of the request to refer the dispute to arbitration, such arbitrator shall be appointed by the president of the highest court in Jordan at the request of either or both parties.

14.2 The decision of the arbitrators shall be final and binding on both the purchaser and the contractor. Any such reference shall conform to the statutory enactment or regulation governing arbitration as may be in force in Jordan at the time. The assessment of costs incidental to the reference and award respectively shall be at the discretion of the arbitration committee.

15 . Ordering Procedures and Delivery Period.

15.1 IDECO Company prefer Delivery period for each call - off purchase order for the required material within 90 day, and the priority will be given to the contractor who decrease the delivery period for purchase orders.

15.2 The contractor shall determine the delivery period which should be considered as the contractual delivery period for each call-off purchase order where this period is an important factor during the evaluation and priority should be given to earlier.

15.3 The purchaser has to send a final awarded letter for each call-off purchase order containing the final total order value for the required items, enabling the contractor or his representative to pay the stamps fees.

15.4 The contractor shall determine the minimum and maximum value per each purchase order, and determine the number of times of purchase orders can be delivered within two years, and the priority will be given to the contractor who minimize the purchase order value and maximize the number of times of purchase orders.

16.Pricing Formula:

The supplier shall obligate to deliver the required materials during two years based on the fixed price of the required materials.

Tendering Instructions

1. The Tender shall be made in one copy of the accompanying form; however, all blanks and schedules shall be filled up in ink, and signed without alteration to the form of tender. If any such alteration were made, or if these Instructions were not fully complied with, the tender may be rejected. The tenderer; however, is at liberty to add any further details that he may deem desirable and, in the event of his so doing, shall print or type such details and annex the added matter to the tender submitted by him. Such additional details shall not be binding upon the purchaser unless they shall be subsequently incorporated in the contract.
2. One copy of the technical offer, and **only Attachment (A)** attached to tender document (**not the whole tender document**), filled up as directed, together with the drawings, catalogs, and relevant documents called for, must be enclosed in a secure envelope endorsed (**Technical offer for Call-off contract**) No. **(67/2017)**.
3. One copy of the commercial offer, and the tender document (**without Attachment (A)**), filled up as directed, together with the relevant documents called for, must be enclosed in a secure envelope endorsed (**Commercial offer for Call-off contract**) No. **(67/2017)**.
4. The bid bond must be enclosed in a secure envelope endorsed (**Bid bond for Call-off contract**) No. **(67/2017)**.
5. All envelopes mentioned in clues 2, 3&4 of tendering instruction must be combined in a sealed envelope or sealed archive box endorsed (**Offer for Tender**) No. **(67/2017)**. But bearing no other mark from which the identity of the tenderer can be ascertained.
6. All correspondences in connection with this tender and all matters accompanying the tender that are relevant to its examination shall be in English language and expressed in metric units.
7. The tender is to be held open for acceptance or rejection for a validity period of (120) days from the time fixed for opening the tenders.
8. Tenders received prior to the time fixed for opening of tenders will be securely kept, unopened. Tenders received after that time will be rejected. The purchaser bears no responsibility for premature opening of tenders not properly addressed or identified.
9. Tenders may be withdrawn by formal request received in writing from the tenderer prior to the time fixed for opening. If for any reason the tender should be withdrawn after the time fixed for opening and before expiry of the said validity period, the purchaser has the right to retain the full value of the tender bond.
10. The successful tenderer shall abide by the commercial and professional regulations as required by the Ministry of Industry & Trade, Engineering Association and other relevant Institutions in Jordan.
11. Tenderers attention is drawn to the action of customs officers in the discharge of their duties. Whereby air parcels are frequently opened In their own interests and in order to preserve the confidential nature of the tender price, tenderers are urged to pay attention to the:

- a. To dispatch the completed tender document and any covering letter only by Air Mail which should be endorsed and labeled in the manner laid down in paragraph 10 of the Instructions to Tendering.
 - b. Technical literature and the like may reasonably be sent by Air Parcel or Air Freight but since this would then be separated from the actual Tender, each parcel should contain specific evidence identifying the Tender to which the contents refer.
 - c. The purchaser will not consider late or incompletely delivered tenders or literature supporting tenders due to the action of any customs officer.
12. In the event that the intending signatory does not manufacture one or more of the main sections of equipment and materials, then the tender submitted should give evidence to show that all the obligations imposed by the documents on the intending signatory have been fully understood and accepted, where applicable, by the manufacturer(s) to whom it would be intended to sub-contract one or more of the main sections of the equipment and materials.
13. For overseas transport of the contractor and his Sub-contractors, suppliers and manufactures must give priority to Jordan shipping national lines, and to Arab shipping companies and their subsidiaries for the shipping of goods, materials provided such companies ships call at the port of export. The contractor shall also give priority to the Royal Jordanian Airlines for air freight shipment and transport of personnel.
14. Tenderer must submit country of origin and name of manufacturer for the offered goods.
15. The foreign bidders who participate in this tender must submit their bids through a registered local agent or through their registered office in Jordan.
16. For all manufacturers from inside Jordan it is quite essential that they have JQM for their products and the purchaser will have the right to accept or reject their offer if they did not submitted the JQM certificate with their offer.
17. If samples were not re-claimed by the tenderer within 60 days from date of order all samples shall remain the property of the purchaser.
18. The purchaser will not be responsible for, nor to pay for, any expenses or losses which may be incurred by a tenderer in the preparation of his tender.
19. If the tenderer has any doubt about the meaning of any portion of the General Conditions, Specifications, Drawings, he shall clarify such doubts before submitting his tender, or in case of any further information can be obtained by an application in writing to the director general.
20. Tenderers are particularly directed that the amount entered on the form of tender shall be a fixed price for performing the contract strictly in accordance with the bound document, and shall be the sum total of all the amounts printed into and entered by the tenderer upon the schedule of prices.
21. Tender price shall include all incidental and contingent expenses.

22. The tender shall be accompanied by a tender bond in the form of a Bank Guarantee valid for at least 120 days from the time fixed for closing date of tender, or certified check in favor of and payable to the purchaser for a sum of.....as a guarantee of good faith. This bond is to be issued by any approved bank in Jordan. The bond will be returned to the unsuccessful tenderer within 120 days from the time fixed for opening the tenders or at such earlier time as a tender shall have been accepted by the purchaser. In the case of the successful tenderer, the bond will, subject to the conditions of contract, be returned as soon as a formal contract agreement and a performance bond have been entered into.
23. **The successful tenderer has to submit a performance bond for each call-off purchase order will be issued by the purchaser equal to (10) percent of the total call-off purchase order value within (15) days from date of the final awarded letter for purchase order.**
24. **The performance bond for each call-off purchase order should be valid for period of (15) months from the date of the purchase order.**
25. **If the contractor fails for any reason to submit the required performance bond within (15) days, the purchaser has the right to confiscate the bid bond and any other submitted performance bond, and the awarding letter for issued call-off purchase order will be cancelled too.**
26. The tenderer shall state in his tender the name or names of the sureties, insurance company, or bank proposed for guaranteeing the performance of the contract.
27. Prices are highly recommended to be on the basis of C&F IDECO STORES. However C&F AQABA port or Amman customs are also accepted.
28. **Stamp duty and award fees are payable on Jordanian contracts according to Jordanian laws and, after the placing of a contract, it is the contractor's responsibility to purchase legal stamps to the requisite amount depending on the contract value for each purchase order.**
29. If after receipt of tenders, the purchaser finds any difference between prices shown on the form of tender in writing and in numerals, then the price shown in writing shall be considered correct by the purchaser and the tenderer. If any discrepancies are found between the total in the price schedule and the total obtained by adding the products of each quantity and its particular rate then, whether the price shown on the form of tender in numerals or in writing corresponds or not, the total obtained by adding the products of the quantities and their particular rates shall be considered by the purchaser and the tenderer as the tender price.
30. Tender revaluation will be consistent with the terms and conditions set forth in the tender document. In addition to the tender price adjusted to correct arithmetical errors, other relevant factors such as the time of completion of delivery or construction, operating costs where applicable, or the efficiency and compatibility of the equipment, the availability of service and spare parts, and reliability of construction methods proposed will be taken into consideration, to the extent and in the manner specified in the tender documents, in determining the evaluated tender most advantageous to the purchaser. For comparison of all tenders, the currency or currencies of the tender price for each tender will be valued in terms of Jordanian Dinars. The rates of exchange to be used in such valuation will be the selling rates published by the central bank of Jordan and applicable to similar transactions, on the day tenders are opened unless there should be a change in the value of the currencies before the award is made. In the latter

case, the exchange rates prevailing at the time of the decision to notify the award to the successful tenderer may be used.

- 31. The purchaser does not bind himself to accept the lowest or any tender, nor to assign any reason for the rejection of any tender, nor to purchase the whole of the equipment and materials specified. The purchaser has the right to purchase part of the tender, even if it is only one item from the schedule of rates and prices.**
32. The tenderer shall submit with his tender in order of the relevant clauses, a statement of any departures from specifications, or he can fill in the related schedule attached herewith. Notwithstanding any description, drawings, or literature which may be submitted, all details other than those in the statement of departures shall be assumed to be in accordance with the specification.
33. Although IEC standards for workmanship, equipment and materials, have been selected in this specification as a basis of reference, standards and specifications of other countries and recommendations of other international standard organizations will be acceptable provided that they are substantially equivalent to the designated standards and provided further that the tenderer submits for approval detailed specification which he proposes to use.
34. References to brand names or catalog numbers, if any, in this specification have been made only for that equipment for which it has been determined that a degree of standardization is necessary to maintain certain essential features. In certain instances such references have also been made for purpose of convenience to specify the requirements. In either case offers of alternative goods which have similar characteristics and provide performance and quality at least equal to those specified are acceptable.
35. Where compliance with a specific standard specification is called for the standard specification used shall be that in force at the time of tender.

General Requirements Standards and Regulations

- The following general requirements will apply, in so far as they may be applicable, to material to be supplied under this particular contract.

1. Design and Construction:

In complying with the requirements of the specification both with respect to arrangement and detail, design is to conform to the best current engineering practice. Each of the several parts of the material is to be of the maker's standard design provided that this design is in general accordance with the specification.

The essence of design should be simplicity and reliability in order to give long continuous service with high economy and low maintenance cost. Particular attention should be paid to internal and external access in order to facilitate inspection, cleaning and maintenance. The design dimensions and materials of all parts are to be such that they will not suffer damage as a result of stresses under the most severe conditions. Fully detailed specifications of the several parts of the material are to be submitted describing particularly the materials to be used. The materials used in the construction of the material are to be of the highest quality and selected particularly to meet the duties required of them. Mechanisms are to be constructed to avoid sticking due to rust or corrosion. Workmanship and general finish are to be of the highest class throughout. All similar parts of the material are to be interchangeable.

All equipment is to operate without undue vibration and with the least possible amount of noise and is not to cause a nuisance. All equipment is to be designed to minimize the risk of fire and any damage, which may be caused in the event of fire.

The equipment is also to be designed to prevent ingress of all vermin, accidental contact with live parts and to minimize the ingress of dust and dirt. The use of materials, which may be liable to attack by termites or other insects, is to be avoided.

2. Compliance with Standards:

Although the standards for workmanship, material, and equipment have been selected in these specifications as a basis of reference, standards and specifications of the other bank member countries and recommendations of standards international organizations will be acceptable provided they are substantially equivalent to the designated standards and provided furthermore that the contractor submits for approval detailed specifications which he proposes to use. Reference to brand names or catalog numbers if any in these specifications have been made only for that equipment for which it has been determined that a degree of standardization is necessary to maintain certain essential features. And in certain cases such references have also been made for purposes of convenience to specify the requirements, in either case offers of alternative goods, which have similar characteristics and provide performance and quality at least equal to those specified are acceptable. If the contractor offers materials, equipment, design calculations or tests, which conform to standards other than those specified, full details of the differences between the proposed standards and that specified in so far as they affect the design or purpose of the equipment, are to be supplied by the contractor if called upon to do so by the engineer, where required by the engineer for approval purposes, the contractor shall supply, without charge, duplicate copies of the proposed standards with English translations of

the relevant portions. The contractor shall have available in his place of business (or in his supplier's works) the relevant copies of standards or codes used for the use of the Engineer.

3. Statutory Regulations

The materials, equipment and instruments forming part of this contract are to comply in all respect with any relevant local statutory regulations, by laws & orders currently in force.

4. Language

English language shall be used in all documents contained in the tender and in all correspondence between the contractor and engineer. Whenever anything is required under the terms of the contract to be written marked, printed or engraved, the English language shall be used and duplicated in Arabic except where otherwise provided in this specification.

5. Correspondences

All correspondences on matters arising out of the contract shall be addressed by the contractor to Engineer and not directly to but copied to the purchaser.

6. Units of Measurement

In all correspondence, in all technical schedules, on all drawings and for all instrument scales, SI units of measurement are to be employed. On drawings where IEC or other units have been used it will be in order if the equivalent SI measurement is suitably marked in addition.

7. Contractor's Responsibilities

Unless stated specifically to the contrary in the tender with full supporting explanations, the contractor will be deemed to have concurred as a practical manufacturer with the design and layout of the works as being sufficient to ensure reliability and safety in operation, freedom from undue stresses and satisfactory performance in all other essentials as a working material.

8. Compliance with Specification

Notwithstanding any descriptions, drawings or illustrations which may have been submitted with the tender, all details other than those shown on the schedule of departures will be deemed to be in accordance with the specification and the standard specification and codes referred to therein.

No departures from the specification except those shown on the schedule of departures and approved by the purchaser are to be made without the written approval of the Engineer.

9. Drawings and catalogues

The Tenderer must submit with his offer all the specification indicating rating, weights, and dimension and time current characteristics of the offered materials.

Before the work is put in hand, dimensioned drawings and diagrams showing all details of the material, and materials to be used are to be submitted to the engineer for approval.

No wiring or connection diagrams shall be submitted for approval unless prior approval has been obtained for schematic diagrams, which are to include control and protection schematics showing the facilities being provided and the working of the schemes.

The drawings are to be submitted in quadruplicate and as soon as possible after the commencement date of the contract, and in any case in sufficient time to permit modifications to be made, if such deemed necessary by the Engineer without delay in the delivery of the contract work. The drawings submitted are to be modified as necessary if requested by the Engineer and resubmitted for final approval. If the contractor requires urgent approval of any drawing to avoid

delay in the delivery of the contract works, he is to advise the Engineer accordingly when submitting the drawing. One copy of each drawing and diagram shall be sent direct to the purchaser. It is to be understood, however, that approval of the drawings will not exonerate the contractor from any responsibility in connection with the work. After all items of material have been manufactured and accepted three 35mm negatives of each drawing previously approved is to be provided together with one reproducible on gauge polyester base film or similar and two prints on heavy gauge white paper from such drawings as may be required to show the detail and arrangement of the material as made. All drawings submitted by the contractor or by any sub-contractor are to have the following particulars in the lower right hand corner in addition to the contractor's name:

IRBID DISTRICT ELECTRICITY COMPANY, CONTRACT NUMBER (67/2017).

10. Program of work

Within one month of acceptance of the tender, the contractor is to forward to the engineer four copies of chart detailing the material manufacture and delivery Program for the complete contract work for his comment or approval. Copies of the approved chart, as required by the engineer, are to be provided by the contractor. The chart is to indicate the various phases of work for all items of the contractor from the commencement of the contract to its final completion, e.g. design, ordering, of materials, manufacture and delivery. If at any time during the execution of the contract it is found necessary to modify the approved chart, the contractor is to inform the engineer and submit a modified chart for approval. Such approval is not to be deemed to be consent to any amendment of the completion date stated in the schedule.

11. Progress Report and Meetings

a. Progress Reports

At monthly intervals after approval of the Program chart, the contractor is to submit to the Engineer and the purchaser written detailed progress reports in triplicate in an approved form, indicating the stage reached in the design, ordering of material, manufacture and delivery of all components of the material. The reports should include details of any delays and the remedial action proposed. These reports are to be forwarded promptly so that on receipt by the engineer the information contained therein is not more than seven days out of date.

b. Meeting:

If during the execution of the contract the Engineer considers the progress position of any section of the work to be unsatisfactory, he will be at liberty to call such meetings, either in Irbid office, or at the contractor's work, as he deems to be necessary. If required by the Engineer a responsible representative from the contractor's works is to attend such meetings. Access to the contractors and sub-contractor's works is to be granted to the engineer at all reasonable times for the purpose of ascertaining progress.

12. Packing

Each item to be packed properly or protected for shipment and be capable of sustaining heavy handling during transportation from the place of manufacture to the purchasers stores in Irbid and hence to site and to be suitable for storage for a period of 6 to 12 months after to site.

Tube ends and other similar open ends are to be protected from both external damage and ingress of dirt and moisture during transit and while at purchaser's stores. Flanged pipes are to have their open ends protected by adhesive tape or jointing and then be covered with a wooden blank flange secured by service bolts. Precautions are to be taken to protect shafts and journals

where they rest on wooden or other supports likely to contain moisture. At such points, wrappings impregnated with anti-rust composition or vapor phase inhibitors are to be used with sufficient strength to resist chafing and indentation due to movement which is likely to occur in transit. Protective wrappings and impregnation are to be suitable for a period of three months. In the case of ball or roller bearings installed in any items of material, precautions are to be taken to avoid indentation of the bearing races.

Metal bindings of cases are to be of corrosion resistant material position with struts or cross battens and not with wood chocks wedged in place, unless they are fastened firmly in place. All struts or cross battens are preferably to be supported by cleats fixed to the case above and below to form ledges on which the batten may rest. Cases are to be unopened after packing to prove that there is no movement of contents.

Where parts are required to be bolted to 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.

Where practicable, all indoor items such as electric motors, switch and control gear, instruments and panels, machine components, etc., are to be cocooned or covered in polyethylene sheeting, sealed at the joints and the enclosure provided internally with a desiccators. Each crate or package is to contain a packing list in a waterproof envelope. All items of material are to be clearly marked for easy identification against the packing list. All cases, packages, etc. are to be clearly marked on the outside to indicate the total weight, to show where the weight is bearing and the correct position of the slings and are to bear an identification mark relating them to the appropriate shipping documents. Stencil marks on the outside of casings are to be indelible. The Engineer may require inspecting and approving the packing before the items are dispatched but the contractor is to be entirely responsible for ensuring that the packing is suitable for transit and such inspection will not exonerate the contractor from any loss or damage due the faulty packing.

Irbid District Electricity Co.

Form of Bid Bond

Tender No. (67/2017)

Dear Sir,

We are pleased to inform you that we guarantee M/S
for the amount of.....in order to allow them to submit an
offer for the due performance of the undertaking and obligation as specified in their Tender for
Contract No.This Guarantee shall remain valid for a period of one hundred
twenty days from the time fixed for opening the Tenders by IRBID DISTRICT ELECTRICITY CO.
LTD.

This Guarantee shall be free from any interest and will be extended or paid in cash upon your
first request in any or required, without the need for natural warning or judicial proceedings and
without any rights to delay, oppose, or stop payment on our part, or on the part of the Tenderer or
any of his representatives whom over. This Guarantee shall be deemed valid until the submittal of
a duly executed Performance Bond.

Signed.....Bank (Surety)

Irbid District Electricity Co. Ltd.

Form of Performance Bond

Tender No. (67/2017)

Dear Sirs,

At the request of bank (the Foreign Bank) and on behalf of M/S..... Contractor's Name and Address), we..... Bank (the Local Bank) issue in your favor our irrevocable and unconditional Performance Bond No.....in the amount of..... (In word), in this connection we Bank (the Local Bank) hereby consider ourselves responsible forth unconditional payment to you or to your authorized representatives of the above sum on your first written demand in whole or in part notwithstanding any objections on the part of the above named contractor and without any need for natural warning or judicial proceedings.

This Bond will expire on and shall be renewed automatically for a period of months and for consecutive similar periods until it is returned by you to us.

Signed Bank (Surety)

Special Requirements

➤ The Below mentioned requirements shall have a precedence in all of the preceding specifications and requirements, and the tender is kindly requested to strictly follow.

1. The manufacturer shall print IDECO Contract No. **(67/2017)**, and **country of origin** along with the stock code corresponding to the certain material as seen in the Stock Code Tape in the invitation to tender schedule - page **(3)**, and **the message already described above, including the metric length.**
2. Maintenance instructions: Where the equipments / materials supplied are subject to maintenance during service the manufacturer shall submit for approval a draft of the recommended maintenance instructions. After approval the supplier shall supply any further copies required by the Engineer. These maintenance instructions shall be provided before the taking over of any part of the equipment.
3. Catalogues: a set of the manufacturer's catalogues shall be attached to the tender.
4. The material safety data sheet (MSDS) of the required materials shall be submitted with the offer.
5. Proper packing and labeling of samples shall be considered.
6. QR code contain the following message shall be printed on nameplate of required materials:

IDECO Tender No. 67/2017

Stock code xxxx xxxx as mentioned in table No.2.

Manufacturer name:

Manufacturing date:

7. The supplier shall submit with his offer reference list for the last 10 years ago.
8. Any additional features on the offered meter that are not mentioned or requested in our tender will go through IDECO's study and analysis by IDECO engineers to be evaluated and it may be considered a deviation.
9. Samples are required to be submitted with the offer, at which every sample shall be stamped by the name of the contractor / manufacturer.
10. The manufacturer shall to submit with his offer reference list for his products for last five years ago.
11. For each purchase order the required materials shall be inspected by two IDECO engineer during manufacturing in country of origin, and all related inspection cost (Visa, Air Tickets, Hotel, Accommodation, Transportation, etc.) Shall be borne by contactor unless otherwise agreed.

Manufacturing and Delivery

- ✓ Below schedule shall be completed by the tenderer and the periods entered shall be binding on the contractor. All periods entered below are to be in weeks and relate to the placing of the contract. Material shall be shipped uniformly throughout the contract.
- ✓ The tenderer shall determine the minimum value per each purchase order, and determine the number of times purchase orders can be delivered within two years. And the priority will be given to tenderer who minimize the purchase order value and maximize the number of purchase orders.

Schedule 1 (Manufacturing & Delivery)

| Required | <u>Data for item (1)</u> (400V L-L), THREE PHASE ELECTRONIC METER, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 4-Wire C.T Operated. | <u>Date for item (2)</u> (110 V L-L), THREE PHASE ELECTRONIC METER, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 3-Wire C.T V.T Operated. | <u>Data for item (3)</u> Modem With Automatic Switching Between 2/3/4G. |
|--|--|---|--|
| Manufacturer | | | |
| Manufacturing Place | | | |
| Inspection Place | | | |
| No. of purchase orders within 2 years | | | |
| Manufacturing Period and Delivery (week) to from purchase order date | | | |
| Minimum quantity per each purchase order. (USD) | | | |
| Maximum quantity per each purchase order (USD) | | | |

Price Summary and Delivery

- The tenderer shall enter in the appropriate columns of this schedule the prices at which each item will be supplied. Prices shall include shipment and delivery to the selected destination seen below based on the following selected transportation obligations.
- transportation obligations shall be indicated by **putting a tick** at the proper following choice:
 CFR - Aqaba Port CPT- Amman Customs CPT- IDECO Stores
- IDECO Company is not exempted from custom duties, sales taxes, import license fees and any other tariffs.
- The tenderer is required to fill in the below table for quoted price without sales tax and custom fees based on the fixed price for required materials, and the offered price shall valid during two years.

Schedule 2

| No. | Quantity (PCS) Within 2 years | Material | Unit Price Currency | Total Price Currency |
|--|-------------------------------|---|------------------------------|-------------------------------|
| 1 | 2000 | (400V L-L), THREE PHASE ELECTRONIC METER, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 4-Wire C.T Operated. | | |
| 2 | 200 | (110 V L-L), THREE PHASE ELECTRONIC METER, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 3-Wire C.T V.T Operated. | | |
| 3 | 2200 | Modem With Automatic Switching Between 2/3/4G. | | |
| <u>Total Contract Price (in words)</u> | | | | |
| Minimum value per each purchase order (currency | | | | |
| Maximum value per each purchase order (currency | | | | |

Name(s) of Sureties:

Name(s) and Address of Tenderer:

Tele / Fax:

Signature:

Answer Back Code:

Position of Signatory:

Inspection Details

- In case of foreign material origin, and inspection of material is required, the bidder shall fill up the following table.
- The inspection is required for each purchase order and for 2 IDECO Engineers at least, and the cost shall be borne by the contractor until otherwise agreed.

Schedule 3

| NO. | Description | |
|------------|---|--|
| 1 | Inspection cost in the country of origin per engineer. (If not included in the main offer). | |
| 2 | Air flight class | |
| 3 | Transportation cost during the period of inspection (Included/not included) | |
| 4 | Residential Hotel Rank | |
| 5 | Daily meals (included/Not included), Number of meals. | |

Tender Agreement Summary
Tender No. (67/2017)

Dear Sir;

1. Having examined the conditions of Contract, specification and schedule for the above Works, the undersigned, offer to manufacture, supply, work, test, and deliver the mentioned works described in the specification and schedules and in accordance with the mentioned conditions of contract, for the sum ofor such other sum as may be ascertained in accordance with the mentioned conditions.
2. We agree that this tender shall be held open for acceptance or rejection for validity period of **120 days** from the date fixed for opening tenders and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
3. Unless and until a formal agreement is prepared and executed, this tender, along with your written acceptance thereof, shall constitute a binding contract between us.
4. If our offer is accepted, we will deliver to Irbid District Electricity Co. Ltd. Within **(15) days** of being called upon to do so a performance bond by bank or insurance company (to be approved in either case by the purchaser) to be jointly and severally bound with us in a sum equal to **10%** of the value of the contract. The form of the performance bond will be as attached hereto. We propose the following Bank or insurance company as surety (or sureties) in this respect:-
.....
5. We undertake if our tender is accepted and on receipt of your acceptance to commence and manufacture, works test, and complete for delivery **ex-works** the whole of the Works offered within (.....) weeks starting from the date of **Order Letter**, and to deliver on the dock at (.....port) - Jordan the whole of the works offered within a further (.....) weeks, or to **IDECO stores** within a further (.....) weeks.
6. We undertake to insure the materials against all risks from the time they leave the works until they are placed on board ship. We understand that marine insurance will be effected by Irbid District Electricity and we will provide details of the materials to be shipped in good time for Irbid District Electricity to arrange for the said marine insurance.
7. A guarantee Period will apply to each section of the works of fifteen months from the date of dispatch ex-works or twelve months from the date of setting to work whichever shall be the later.
8. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated thisday of / / 2017.

Signature.....in the capacity of

Duly authorized to sign Tender for and on behalf of.....

Address.....Occupation.....

Technical Specifications

| Item No. | Quantity (Pcs) | Material Description | Stock code |
|----------|----------------|--|------------|
| 1 | 2000 | (400V L-L), THREE PHASE ELECTRONIC METER, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 4-wire C.T operated | 6625-2157 |
| 2 | 200 | (110 V L-L), THREE PHASE ELECTRONIC METER, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 3-wire C.T V.T operated. | 6625-2162 |
| 3 | 2200 | Modem with Automatic switching between 2/3/4G | 6625-4111 |

❖ **ITEM No. 1: (400V L-L), THREE PHASE ELECTRONIC METER, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 4-wire C.T operated with cellular modem.**

Reference Standard: International Standard specifications IEC 62052/53 or an equivalent IEC specification.

Any additional features on the offered meter which not mentioned or requested in our tender will go through IDECO's study and analysis by IDECO engineers to be evaluated and it could considered a deviation.

1. Climate Conditions:

The following is applicable unless otherwise is mentioned:

- | | |
|--|----------------------------|
| 1. Maximum Ambient Temperature | 75 C° |
| 2. Minimum Ambient Temperature | -10 C° |
| 3. Design temperature | 45 C° |
| 4. Maximum daily range of air temperature | 20 C° |
| 5. Maximum Wind Pressure | 420 n/m ² |
| 6. Ice Thickness | 10 mm. |
| 7. Snow Falls | 1-4 days – 30 cm. |
| 8. Site altitude | 0-1400m ASL |
| 9. Average annual rainfall | 40cm during November–April |
| 10. Relative humidity in the range | 90%. |
| 11. Average number of thunder storms | 15 days / year |
| 12. Prevailing wind winter average daily approximately 5-8 m/s, with gust up to 30 m/s. | |
| 13. Summer wind average afternoon 10-13 m/s, during morning generally light and variable, gust speed up to 30 m/s. | |

2. Meter rated parameters:

The three phase meter shall be of Class 0.5s for indoor and outdoor domestic applications with:

- Rated current of 5-10 A
- Rated Voltage of $400 \pm 10\%$ V (L-L)
- Frequency 50 HZ
- Electromagnetic Compatibility of 15kV according to IEC61000-4-2
- Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC61000-4-3
- Fast Transient Burst 4 kV for main circuits, 2 kV for auxiliary circuits, to IEC61000-4-5
- Insulation strength of 4kVAC at 50Hz for 1 minute
- Insulation strength Pulse Voltage 1.2/50microsec, 8kV main circuits, 6 kV auxiliary circuits according to IEC 62052-11
- Impulse withstands voltage of (8kV)
- **The meter accuracy must be equal or less than 0.5 % in all accuracy tests (different value of current and power factor)**

3. Meter tariff, billing and display:

3.1. First priority Features:

- 3.1.1. (400V L-L), Three Phase Electronic Meter, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 4-wire C.T operated, with 12 seasons and 12 maximum demand /year. High accuracy and long-term measurement stability.
- 3.1.2. Active energy (import, export), as IEC 62053-22, IEC 62053-21, class 0.5s
- 3.1.3. Reactive energy (4 quadrants and combined quadrants), IEC 62053-23, class 1.
- 3.1.4. Current average, maximum and cumulative demand measurement
- 3.1.5. Instantaneous and historical measurements of V, I, PF, phase angles, demands, frequency...etc.
- 3.1.6. The meter shall measure the energy with daily rates (up to four rates). And the purchaser shall have ability to easily configure these four rates at the desired times of day.
- 3.1.7. The meter shall be able to provide historical data, (billing periods for not less than 12 months). The meter shall be programmable to show these historical data registers on LCD, beside the possibility to read them through optical probe or remotely.
- 3.1.8. The meter shall have the ability to measure the energy (Import and export) even if the one phase is importing energy and other phases are exporting. To be approved by IDECO engineer.

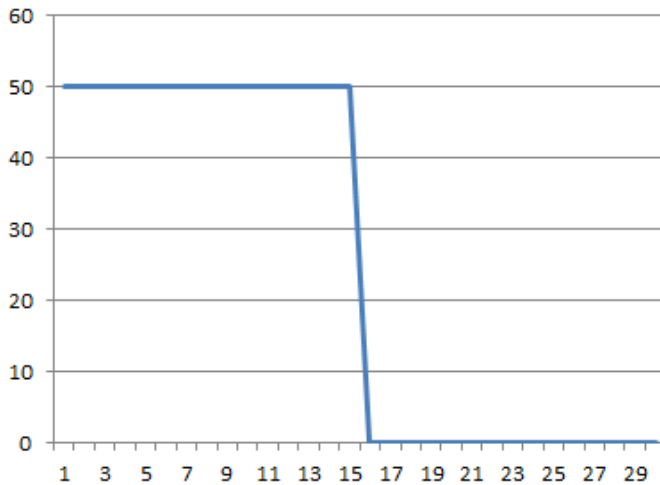
3.1.9. Tenderers are requested to quote meter with a maximum demand, the meter shall be able to be programmed to activate the maximum demand within the specified daily period for a specific season. So the meter shall be able to be programmed so that the year will be divided into seasons (up to 12 seasons, dates are changeable every year) and the maximum demand shall be activated in a specified daily-period of times (also changeable) for each season. And record the maximum demand in a specific register and with the ability to show it on the LCD, the maximum demand interval should be programmable and the default setting is 30 minutes.

The maximum demand is not the instantaneous maximum value for each interval it has an equation and it shall be computed as follows:

$$\text{The Demand For Each Interval (KW)} = \frac{\text{The Energy in This Interval (KWH)}}{\text{Time of Interval (H)}}$$

Our interval is always 30 minutes = 0.5 Hour.

For example if the power is 50 KW for the first 15 minutes and 0 KW for the second 15 minutes.



$$\text{The Energy for This Interval} = 50 \text{ KW} \times 0.25 \text{ H} = 12.5 \text{ KWH}$$

$$\text{The Demand for This Interval (KW)} = \frac{12.5 \text{ KWH}}{0.5 \text{ H}} = 25 \text{ KW}$$

3.1.10. The meter shall store the load profile in the meter memory. And it shall consist of energy and power readings, along with the instantaneous measurement like voltages, currents and power factor. With the ability to choose (using the software) what the meter should include in the load profile and configure the time interval for these readings. The default time interval is 30 minutes.

3.1.11. All of the measurement and registers shall be compatible with Obis-Code registers, and the meter shall have the ability to show any stored register on the LCD, and the OBIS code should be shown with the registers on LCD, For example, import active energy (1.8.0), last month import active energy (1.8.0.1), and that should be approved by IDECO.

- 3.1.12. The meter shall include a built-in RTC (Real Time Clock) of base time shall be taken from crystal oscillator. To provide the time and date for the meter and display it on the LCD and use it to meet the tariff scheme mentioned in Item (3.6), the historical readings mentioned in Item (3.7), the maximum demand in Item (3.8), the load profile in Item (3.9), and any other needs. And it shall continue to operate during power failure.
- 3.1.13. The meter's register shall reset to Zero after reaching the maximum range 9999999.9 and all digits should always appear. And not be permitted to reset to zero under any circumstances. Before reaching the maximum range.
- 3.1.14. A programmable auto cycle display with a programmable switch-over (0-30 sec.) between the different registers must be provided and it should be programed separately from the push button option.

The default setting for the auto cycle display is:
Total absolute active energy

And for the push button is:

| Number | OBIS code | Description |
|--------|-----------|--|
| 1. | 15.8.0 | Absolute active energy (A+) total [kWh] |
| 2. | 1.8.0 | Import active energy (A+) total [kWh] |
| 3. | 2.8.0 | Export active energy (A-) total [kWh] |
| 4. | 16.8.0 | Sum active energy without reverse blockade (A+ - A-) total [kWh] |
| 5. | 1.6.0 | Import active maximum demand (A+) total [kW] |
| 6. | 32.7.0 | Instantaneous voltage (U) in phase L1 [V] |
| 7. | 52.7.0 | Instantaneous voltage (U) in phase L2 [V] |
| 8. | 72.7.0 | Instantaneous voltage (U) in phase L3 [V] |
| 9. | 31.7.0 | Instantaneous current (I) in phase L1 [A] |
| 10. | 51.7.0 | Instantaneous current (I) in phase L2 [A] |
| 11. | 71.7.0 | Instantaneous current (I) in phase L3 [A] |
| 12. | 0.9.1 | Current time (hh:mm:ss) |
| 13. | 0.9.2 | Date (YY.MM.DD or DD.MM.YY) |

- 3.1.15. The meter shall indicate on the LCD the availability of the three phases and the loss of any phase. And the direction of each current (imports or export).
- 3.1.16. The meter shall support daylight saving according to Jordanian standard. And it shall be possible to change date, time as well the tariff program with laptop
- 3.1.17. A high contrast, fully electronic and digital Liquid Crystal Display (LCD) must be provided with light illumination which should be on from first button and uses information on the display to indicate the active element. (the back light should be not work if the meter have of grid)
- 3.1.18. The display should be very clear (day and night) with not less than 8 (7+1) digits excluding the hidden decimals for testing, and all main digits should be continuous showing on the screen

3.1.19. The meter shall provide daily information on meter readings with multi tariffs registers (import and export) with maximum demand.

3.2. Second Priority Features:

3.2.1. The LCD digit dimension should not be less than 11 X 5.5 mm.

4. Meter Hardware:

4.1. First priority Features:

- 4.1.1. A push button for reading the display manually must be provided. And this list of registers shall be separate from the auto cycle mentioned in Item (3.13).
- 4.1.2. The meter shall have the facility to be read even if the power is not present.
- 4.1.3. The Non-volatile memory minimum retention time shall not be less than 20 Years which has to be confirmed by an official certificate.
- 4.1.4. The battery shall be changeable easily (inside sealed cover) and the lifetime shall not be less than 15 years which has to be approved. And the meter shall continue to operate even if the battery is lost for any reasons. The battery should not be used if the meter is connected to power.
- 4.1.5. The lifetime of the offered meter has to be not less than (20 years) which has to be confirmed by an official certificate.
- 4.1.6. The lifetime of the offered LCD has to be not less than (20 years) which has to be confirmed by official certificate.
- 4.1.7. During the meter lifetime it doesn't require any calibration or maintenance, stability of meter accuracy should be guaranteed. The lifetime of the meter has to be confirmed by an official organization. A certificate to this effect has to be provided.
- 4.1.8. The meters shall not generate waves or harmonics which might affect the neighboring electrical instruments or super imposed on power lines and shall not be affected by power failure that may prevent control of the meters.
- 4.1.9. The meter shall have a case which provides an ingress protection rating of IP54 in accordance with IEC 60529:1989 with extended terminal cover having rigid and homogeneous thickness without knock out grooves (weak areas) to prevent access to the feeding wires.
- 4.1.10. The enclosures of meters should be capable of being easily sealed with lead and two steel wire seals (the seals will supplied and installed by IDECO as per our stander with 1mm diameter for each), one of them is a large plastic sealed with diminution of 2.25 cm *2.75 cm *2cm,, and the hole shall be with suitable size for using two wire seals easily.
- 4.1.11. The extended terminal cover shall be capable of being easily sealed with lead and wire large plastic seal to prevent any accessing to the feeding wires.

- 4.1.12. Materials of the main cover of the meter shall be non-transparent and the terminal cover shall be clear transparent, both cover must be high resistive to fire hazards. It should be of sufficient strength to protect the working parts and to be adequate to protect the meter against mechanical injury. It shall not be affected by chemical materials used for cleaning purposes specially the meter's LCD. The quality of materials should be fully complying with the all tests according to IEC.
- 4.1.13. The meter should be of the front- connected type with a hanging device provided and fitted on the base compatible with modern test rack fixings.
- 4.1.14. The equipment in this specification should be capable of accepting any size of conductor in the range 1.5 mm² up to 6 mm² of stranded copper or Aluminum conductor PVC or XLPE insulated and it should be compatible with our test bench.

4.1.15. Terminals of the meters shall be arranged as the following:

| | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| PH1 | PH1 | PH1 | PH2 | PH2 | PH2 | PH3 | PH3 | PH3 | N | N |
| S1 | V | S2 | S1 | V | S2 | S1 | V | S2 | | |

Reading left to right when facing the front of the meter case.

- 4.1.16. The width of the terminal block shall not exceed 170 mm and according to DIN 43857. The terminals shall be made of nickel- coated brass (bimetallic) material to enable a good electrical contact in hot and humid conditions. The fixing screws shall also be nickel- coated brass material to enable a good contact and prevent loosening at heat. And the terminal should be compatible with our test bench (Zera). And the screw position should be ready to test.
- 4.1.17. The meter base, terminal cover of extended type and main cover should be made of suitable rigid plastic material of adequate mechanical and insulation qualities and the meter connection drawing should be provided under terminals cover.
- 4.1.18. Each supplied meter shall have a serial number as our stander for numbering printed in numbers and bar-code 128 Type-C on property plate at the front of the meter to be easily read by IDECO hand held unit "Bar-Code reader". The serial number should be parameterized inside each meter to express its unique identity by manufacturer.
- 4.1.19. The tenderer must state the power consumption for the meter with its internal circuits. And also state the power consumption for every compatible modem.
- 4.1.20. The meter shall be equipped with LED's to present active, reactive impulse and power and alarm status as full operation for mentioned.
- 4.1.21. There shall be two batteries for the meter. One for the RTC circuit, and one for the main meter functions. And the minimum capacity for each one must be at least 1.2 Ah using larger battery or using CMOS-RAM instead of an EEPROM to save the RTC, will be highly recommended.

3.1. Second Priority Features:

4.2.1. The meter shall be equipped with four LED's:

- Active Energy Impulse LED for meter testing, and the meter constant shall be in from of impulse/ KWh. And this LED should have not less than 2 cm from any other LED.
- Reactive Energy Impulse LED for meter testing, and the meter constant shall be in from of impulse/ KVARh. And this LED should have not less than 2 cm from any other LED.
- Alarm LED: the description is in point 7.0.
- Power LED

4.2.2. Materials of the main cover of the meter shall be white color.

4.2.3. The meter memory shall be replaceable and compatible with a slot (adapter) provided by supplier, so that the memory can be read externally in case of meter failure or damaging.

5. Communications

5.1. First priority Features:

5.1.1. The meter shall include two ways IrDA optical communications port (According to IEC62056-21/IEC61107 Mode C). Contractor shall provide software open protocol license which enable the user to make easy read and write from and to the meter with magnetic essay connection probe. And it couldn't be deactivated in any condition but it should have sealed cover, high security data transfer is must.

5.1.2. The meter shall have capability to operate plug and play variable IP 4/3/2G modem (according to Jordanian requirements) with removable external antenna that allows two way communication with the meter using an external modem. According should as per IEC 62056/DLMS HDLC mode with sealed screw cover and suitable place which is prepared for AMI(Advanced Metering Infrastructure)and provided with all suitable possible bidirectional communication modules to transmit and receive data by means. The meter shall be equipped with a power supply for the modem.

5.1.3. The meter communication protocol shall be an (high security) open protocol according to the IEC62056-21 and DLMS Communication Protocol which accepts the communication with multiple software from different vendors (this should be approved) which enables Automatic Meter Management (AMM) such as (meter reading, parameterization, diagnostic. etc...).

5.1.4. The DLMS certification must be provided to approval that meters are passed DLMS test.

5.1.5. The modem antenna should have both option internal or external and the meter should be ready for both and the internal antenna should be completely inside the meter case.

5.1.6. cellular modems should be as per Jordanian requirements.

5.2. Second Priority Features:

5.2.1. Input/output module: Maximal combination is 4 inputs and 8 outputs. Inputs and outputs are freely programmable the meter should be ready to connect and control mortise MCCB using suitable way and it should explained and approved.

6. Meter software:

6.1. First priority Features:

- 6.1.1. The meter's software shall be supplied with the meters with open license and security keys and programming cable for at least 15 users, this software should be user-friendly including all controllable parameterization features such as multi-level of security for down loading and up loading the data USB key is required .
- 6.1.2. The meter shall be able to store all events happened with their time stamp in the log book such as (power up, power down, tampering events, over voltage... etc.). This event parameter should be programmable for the value and the duration (for some event like over voltage or sag etc.) which should be up to 60 minutes interval.
- 6.1.3. The features in the Special Requirements are required.
- 6.1.4. The vendor shall provide IDECO with any needed support to program IDECO HHU to control the meter. Upon to IDECO request with the same modification condition in point 6.1.
- 6.1.5. The software shall be compatible to connect to the meters remotely through cellular, and the tenderer should supply all the required to run the software using IDECO servers to support all the supplied quantity of meters.
- 6.1.6. The software and the meter shall have a log, where it shall store the user information, meter number, date & time, and the type of modification accrued.

6.2. Second Priority Features:

- 6.2.1. The meter software is preferred to have the ability of programming number of meters connected to the system remotely at once, monitor and configured at same time.
- 6.2.2. The software module could be upgraded or modified upon to IDECO requests without extra charges while (IDECO) owns all software management properties. The software shall be submitted with very detailed user manual along with the sample which should be submitted with the offer this software should have individual user accounts and it should communicate with the meters using IR and also remotely communication with free license for the all supplied meter quantity. (The vendor should make any required modification on the software within 24 months after delivery with maximum 30 days to complete any requested modification after IDECO send it to his official address (email or fax)).

7. Anti-tampering features

7.1. First priority Features:

7.1.1. The meter shall be a high- level anti- tampering. This meter should detect and record the energy (energy recording in such cases should be fully explained from the tenderer and approved by IDECO) and event with time stamp for the following tampering cases:

- Disconnecting one or more phases.
- Bypassing the meter by connecting or jumpering C.T. terminals.
- Switching between phases.
- Changing the sequence of voltage or current signals.
- Invert or reverse the C.T. terminals.
- High magnetic field exposure.
- Main and terminal cover opening.
- Other anti-tampering features are highly preferred.

7.1.2. The meter shall be completely tamper proof design and construction, facilitated with up-to-date anti-fraud protection with all fraud events that shall be record in meter's history in the log book with their time stamp.

7.1.3. The meter shall detect and record the accurate energy consumption correctly even under tampering conditions. Under these conditions,(energy recording in such cases should be fully explained from the tenderer and approved by IDECO)which occur by opening terminal cover or meter's cover, a visual annunciation appears on the LCD screen and on LED at the meter front in addition to store these events in the log book with their time stamp

7.1.4. The meter records the accurate consumption under reverse run on 15.8.0 conditions but the meter should register import on 1.8.0 and export energy on 2.8.0.

7.1.5. The meter should not be influenced by external strong DC or electrostatic DC discharge up to 100 KV.

7.2. Second Priority Features:

7.2.1. The meter shall be provided with alarm flag displayed on LCD (with corresponding flags printed on the nameplate) to indicate for all of the tampering cases stated in Item 7.1.1 (and for any detected non mentioned tampering case). And record the date and time of this case besides storing all the events in the meter's memory and storing the energy. And this flags shouldn't disappear by itself but to use PC software to clear it.

7.2.2. In addition to mentioned alarm flags the meter should have Alarm LED and it preferred to be programmable when it should be on, IDECO shall approve this operation.

7.2.3. when the meter detect main cover open event the meter screen should hide the KWH register after 10 days of (main cover open) even if the cover closed for and this operation and its timer should be stopped or canceled by the meter pc program with separate security level.

8. Electrical features and certifications:

All of these features are first priority:

- 8.1. KEMA or (relevant and IDECO accepted lab) Certificate should be shown for the same meter and IDECO should witness type test in the factory.
- 8.2. The tenderer/manufacturer of the meters offered shall supply proof that he has been manufacturing meters similar to those specified in this document, for at least 5 years. The Tenderer shall submit with his offer a list of supply Authorities using similar meters to those offered as references and the current re-certification period required by law in the country of manufacturer. The Tenderer shall also submit evidence and certificate from KEMA or SGS that the meters can operate for at least 20 years and remain within limits of error of $\pm 1\%$ during that time. This has to be confirmed by an official certificate/letter from an Official Institute like OFGEM/GB, or similar international organization.
- 8.3. The tenderer/manufacturer of the meters offered shall supply proof that his meter is used on AMI project and a letter from the customer should be present in the offer.
- 8.4. The meter shall not be affected by power failure, as it contains early detection means of power failure, which permits control circuits to store consumption data, and configure the circuit for this failure.
- 8.5. The metering element is shielded against external magnetic fields and electrostatic discharge, and protected against over voltage and high frequency disturbances.
- 8.6. The meters shall not generate electromagnetic waves or harmonics which might affect the neighboring electrical instruments or superimpose on power lines.
- 8.7. The Tenderer must submit with his offer all the specifications, software manual, indicating ratings, weights, dimensions and time current characteristics of the offered materials
- 8.8. Meters shall be calibrated at time of manufacturing. For security reasons it should not be possible to do any calibration at site nor at the test station of the purchaser.
- 8.9. However, according to the local rules it must be possible to do regular checking / testing at site with on-site test equipment.
 - 8.10. Any presented certificates or approval etc., requested in this tender must be for the same and exact offered meter or components without any deviation and it should be from one of those labs KEMA, NMI, CESI, SGS, NMI or IPH , any other lab will be subject to evaluation by IDECO and could be accepted or rejected.

9. Meter test

All of these features are first priority:

- 9.1. All meters supplied against the requirements of this specification will be tested before transfer to storage on IDECO Meter Test Bench, and should any meter found to be outside the specified accuracy tolerance, it will be rejected and the contractor shall supply the relevant number of replacement meters at no cost to the purchaser.
- 9.2. The meter shall be protected against high voltage DC discharge up to 100KV and this should be approved by shock a samples of the meter up to 20 times in two minutes by using 100kv DC Taser and the factory should provide IDECO engineer with this Taser.
- 9.3. The meters shall be factory-calibrated and tested under conditions according to IEC62052- 11 so that when they are tested under the reference conditions stipulated in IEC 62053-11 first Edition 2003, the percentage errors shall be far within the limits as specified in IEC62053-11. Should the meters be re-tested for at a later date, the difference in accuracy readings between the first and second tests shall not exceed 1%. Furthermore, the meters shall be capable of being transported by road to the purchaser's Test Station in Irbid without losing their calibration.
- 9.4. For Certification by Local Authorities, meters shall be tested against a minimum/maximum error limit of the percentage of the test points (loads) specified in IEC 26053 -11 First Edition 2003. The difference between the original test value and the certification value shall not exceed +/-1%.
- 9.5. Power Losses: The losses in each voltage and current circuit shall be measured under reference condition to prove compliance with tables 1 and 2 IEC 62053-11 first Edition 2003.
- 9.6. Heating and Dielectric Tests: Tests shall be carried out to establish compliance with the requirements of clauses 1.3 and 7.4 of IEC62053-11 First Edition 2003. Where these tests have already been carried out on meters identical in design and specification to those included in this contract then full details may be submitted of approval by the Engineer in of type testing.
- 9.7. Accuracy: Under the condition set out in clause 5.5 of IEC 62053-11 first edition 2003 and after being energized for the appropriate period state therein, the meters shall be listed to establish that the actual percentage error values fall within the limits as set out in clause 1.3 of these specifications.

The mean temperature co-efficient shall be determined for the reference temperature and shall be within the limits. The variations due self-heating should be determined.

The meters shall be factory-calibrated so that when they are tested under the reference condition stipulated corresponding IEC62053-21 and, be retested for accuracy at later date, the difference in accuracy reading between the first and second tests shall not exceed 1%. Furthermore, the meters shall be capable of being transported by road to the purchaser's Test station Irbid without losing their calibration.

- 9.8. Insulation Test.
- 9.9. The meters shall be tested at pressure of 4kV for a period of 1 minute between all live terminals and earth.
- 9.10. **Any other type or rotten test can be requested by IDECO to do it in the factory or/and to get certification from previous mentioned labs.**

10. Property Plates: The meters shall be provided with laser printed label(s) detailing the following:

All of these features are first priority:

- 10.1. Meter Type
 - 10.2. Manufacturer and year of manufacturing
 - 10.3. Voltage, phase(s), wire(s)
 - 10.4. Meter Current
 - 10.5. Frequency
 - 10.6. Accuracy class
 - 10.7. Number of pulses per KWH, KVARH
 - 10.8. The words "Property Of Irbid District Electricity Co. LTD"
- 10.9. The plate shall carry a serial number (supplied by the purchaser). It shall specify the contract No. (IDECO-**xx/20xx**), and the year of manufacturing, the plate shall also carry a separate serial number from (0000000000) to (0000000000) (the numbers will supplied by IDECO to the factory)
- 10.10. IDECO contract No. **xx/20xx** and stock code 6625-2157 as seen on page 2.
 - 10.11. All packing cartoons and wooden boxes shall carry IDECO contract **No. xx/20xx**
 - 10.12. Flags numbers for tampering indication as in tampering section (to be approved by IDECO)
 - 10.13. Previous data in all Items could be change upon to IDECO request before manufacturing and the manufacturer should have IDECO acceptance on it before manufacturing.

11. Sample meters and its Software:

All of these features are first priority:

- 11.1. Non-returnable one Sample meter identical to the offered designs must be hand-carried and submitted with the Tender within 25 days from tender closing date with a presentation at IDECO office. These representative samples will be closely examined and will undergo mechanical, electrical and accuracy tests at the IDECO Test Station in Irbid. Failure of the samples to meet the mechanical and electrical Specifications set out in this Document will entitle the Purchaser to reject the meter. And this sample must comply with all first priority tender requirements.
- 11.2. These samples shall be programmed to meet the previous IDECO Tariff scheme and features.
- 11.3. Full programming software with manual should be submitted with the offer.
- 11.4. The purchaser will go through the configurations of the meter sample and make the proper modification, so the tenderer/manufacture will configure all of the meters to meet the needs of the purchaser.
- 11.5. The sample should be supplied with of non-returnable cellular modem tenderer/manufacture and the tenderer shall present real time demo for this modems in IDECO office
- 11.6. Cellular modem full operation should be shown in the presentation using Jordanian. SIM card and the meter software
- 11.7. Any other related mentioned point in the tender shall be in the presentation.

12. Installation and maintenance support.

All of these features are first priority:

12.1. The meter shall provide information on the display to support the installer during installation of the meter, such as:

- Measurement of the instantaneous voltage.
- Measurement of the power factor.
- Measurement of the instantaneous current.
- Battery level.
- The direction of the current.
- Phase sequence.

13. Meter Data Management System (MDMS):

All of these features are first priority:

The Tenderer should supply a compatible (lifetime free license for the supplied meters) meter data management system (MDMS) with the ability to run all the supplied quantity of meters and it shall have the following specifications:

- 13.1. The system shall monitor all the registers and readings for all the supplied quantity of meters.
- 13.2. The system shall monitor all type of events and alarms, with integrated alarm system.
- 13.3. The system shall have the ability to export reports for all the mentioned data above.
- 13.4. The system shall have the ability to save a historical data for all the mentioned data above. And save the customer details.
- 13.5. This software must be installed in IDECO Servers by the tenderer. And the tenderer shall provide all the support that IDECO needs to run the software.
- 13.6. The system should monitor the online and offline status for all supplied quantity of meters.
- 13.7. The system should provide data about online and offline history.
- 13.8. There shall be a way to import meters to system from excel or other databases.
- 13.9. The system shall have the ability to manage customer information along with meter numbers.
- 13.10. The system shall have the ability to program multiple meters altogether with single order.
- 13.11. Free two year technical support is required.
- 13.12. The supplier should be responsible to install the software in IDECO server with in site training for IDECO engineer.

14. Special Requirements

All of these features are first priority:

The Below mentioned requirements shall have a precedence in all of the preceding specifications and requirements, and the tenderer is kindly requested to strictly follow.

- 14.1. Free full free software training for 2 IDECO engineers.
- 14.2. The tenderer should provide IDECO with suitable way or equipment to read the memory of any damaged meter such as memory holder to read it through optical probe, and at least three of this hardware should supplied with the tender. And one of them should come with the presentation.
- 14.3. The tenderer should supply 15 optical probes and 15 USB key with the meters.
- 14.4. Partial order could be apply.
- 14.5. Maintenance instructions: Where the equipment / materials supplied are subject to maintenance during service the manufacturer shall submit for approval a draft of the recommended maintenance instructions. After approval the supplier shall supply any further copies required by the Engineer. These maintenance instructions shall be provided before the taking over of any part of the equipment.
- 14.6. Each shipment required based on (request for delivery) shall be inspected in country of origin by IDECO engineers. And the vendor shall state the cost of inspection process per engineer. The inspection process consists (Visa, Air Tickets, Good Hotel, Accommodation, Transportation, etc.) for representative engineers at the manufacturer house. Each purchase order shall be inspected to ensure the proper handling and operation of the supplied materials.
- 14.7. If a visit to a factory is required for evaluation purposes before signing the agreement, the tenderer must do all necessary arrangement for this visit; the related cost of visit by IDECO team will be borne by the manufacturer
- 14.8. The vendor should have supplied at least 500 meter of the same type for Middle East or Europe or USA market and that should be approved by the customer.
- 14.9. The material safety data sheet (MSDS) of all equipment / materials is required to be submitted with the offer.
- 14.10. The meter should have the following sticker with size of 8 cmx3cm on the both side of the meter and it should be paper with PE layer cover and it Must be resistant to moisture and water and it should be cracked and damaged if it is removed one-time.



كهرباء إربد
Irbid Electricity

تنبيه عام



إن فتح غطاء العداد قد يعرضك للغرامة المالية والمسائلة القانونية وقد يعرضك لخطر الصعقة الكهربائية.

- 14.11. The meter Main Components Manufacturer should be only from short list below and that should be approved.
- 14.12. The meter programing and configurations should be approved by IDECO engineer before shipping.
- 14.13. The manufacturer should provide all physical and technical specifications for modem, and the meter shall be compatible with any modem manufacturer.
- 14.14. The tenderer should include PDF (text) softcopy (not scanned) for the offer.
- 14.15. The vendor should supply all needed support to run the meter on third party MDM.
- 14.16. The software shall have the next features (this doesn't cancel any previous mentioned features):

I. Introduction

1.1 Purpose

The purpose of this document is to give a detailed description of the requirements for the “Meter Software”. It will illustrate the purpose and complete declaration for the development of system. It will also explain system constraints, interface and interactions with other external applications. This document is primarily intended to be reference for developing the first version of the system. And later upgrade to meet the approval of the purchaser.

1.2 Definitions

| Term | Definition |
|---------------------|--|
| User | Someone who interacts with the software. |
| Admin/Administrator | System administrator who is given specific permission for managing and controlling the system. |
| Web-Portal | A web application which present special facilities for restaurant owner |
| cellular | General Packet Radio Service |
| | |

II. Specific requirements

3. Reading Registers

The meter software shall be compatible with the OBIS code for IEC 62056 standard protocol. And it shall have all of the registers stated in the code. We shall have 3 list of registers; LCD auto scrolling, LCD Button scrolling and readout list that can be read via optical probe or other communications methods.

4. Events

The software should have the ability to configure and read the stored event in the meter. And the following events shall be recorded.

- **Standard Event:**

- Programing event
- Firmware upgrade succeed
- RTC change
- Login failed(including password error)
- Tariff change
- FLASH failure
- Low battery
- Clear event record

- **Power Grid Event:**

- Power off for long time
- Power off for short time
- Current unbalance
- Voltage t unbalance
- Energy reverse of phase A/B/C
- Current lost of phase A/B/C
- Sag of phase A/B/C (level 1)
- Swell of phase A/B/C(level 1)
- Sag of phase A/B/C (level 2)
- Swell of phase A/B/C(level 2)
- Reversed phase sequence
- Incorrect phase sequence

- **Anti-Tamper Event**
 - Meter Terminal cover open
 - Meter cover open
 - Big magnetic field influence
 - Module remove
 - Reverse Polarity
 - Low battery
 - ETC

5. The software shall have the ability to configure every parameter or specification stated in the meter tender.
6. The software shall import and export parameter setting to external files for the purpose of saving, sharing and storing. And to add a protection feature; so that any saved file (containing the configuration) cannot be edited or modified to prevent any errors.
7. Configuring multiple meters is preferred to be available in the software, so that the purchaser shall have the ability to enter the serial numbers of the specified meters and then program them with the same configurations using one order.
8. The software shall be able to configure the state of the meter relay in all the different communication methods stated in the tender.
9. The meter software shall have the ability to export all readings, load profile and event parameter to external document files supported with Microsoft Windows and Office.
10. The software shall have the ability to generate reports and graphs to meet the desires of the purchaser.
11. The software shall have a log, where it shall store the user, meter number, date & time, and the type of modification accrued.

The software shall be able to interchange data, configurations, and orders with other systems like AMI, billing software, and MDM.

Main Components Manufacturer Reference List

(To be completed by The Tenderer, **Only the Reference List Manufacturer is qualified in this Tender**)

| Item No. | Description | Reference Manufacturer and Place of manufacture | Offered component manufacturer | Offered component place of manufacture |
|----------|-----------------------|---|--------------------------------|--|
| 1 | SMT Resistance | TDK - Japan YAGEO - Taiwan UniOhm - Taiwan Murata - Japan Nippon Chemi-Con - Japan RUBYCON - Japan ST Microelectronics - Europe Microchip - USA Maxim Microelectronics - USA Texas Instruments - USA Microchip - USA ON Semiconductor - USA JRC - Japan KDS - Japan SEIKO - Japan | | |
| 2 | SMT Capacitor | | | |
| 3 | SMT Filter | | | |
| 4 | Electronics Capacitor | | | |
| 5 | MCU | | | |
| 6 | E2PROM | | | |
| 7 | FLASH ROM | | | |
| 8 | RS485 Chip | | | |
| 9 | POWER REGULATOR | | | |
| 10 | CRYSTAL OSCILLATOR | | | |
| 11 | BATTERY | SAFT | France | |
| | | Tadiran | Germany | |
| | | Panasonic | Japan | |
| | | SANYO | Japan | |

Technical approval table

The tenderer must fill the data in the next tables

1. Climate Conditions:

| Item | Approved | Deviation |
|------|----------|-----------|
| 1 | | |

2. Meter rated parameters:

| Item | Approved | Deviation |
|------|----------|-----------|
| 1 | | |

3. Meter tariff, billing and display:

| Item | Approved | Deviation |
|-------|----------|-----------|
| 3.1.1 | | |
| 3.1.2 | | |
| 3.1.3 | | |
| 3.1.4 | | |
| 3.1.5 | | |
| 3.1.6 | | |
| 3.1.7 | | |
| 3.1.8 | | |

| | | |
|--------|--|--|
| 3.1.9 | | |
| 3.1.10 | | |
| 3.1.11 | | |
| 3.1.12 | | |
| 3.1.13 | | |
| 3.1.14 | | |
| 3.1.15 | | |
| 3.1.16 | | |
| 3.1.17 | | |
| 3.1.18 | | |
| 3.1.19 | | |
| 3.2.1 | | |

4. Meter Hardware:

| Item | Approved | Deviation |
|-------|----------|-----------|
| 4.1.1 | | |
| 4.1.2 | | |
| 4.1.3 | | |

| | | |
|--------|--|--|
| 4.1.4 | | |
| 4.1.5 | | |
| 4.1.6 | | |
| 4.1.7 | | |
| 4.1.8 | | |
| 4.1.9 | | |
| 4.1.10 | | |
| 4.1.11 | | |
| 4.1.12 | | |
| 4.1.13 | | |
| 4.1.14 | | |
| 4.1.15 | | |
| 4.1.16 | | |
| 4.1.17 | | |
| 4.1.18 | | |
| 4.1.19 | | |
| 4.1.20 | | |
| 4.1.21 | | |
| 4.2.1 | | |

| | | |
|-------|--|--|
| 4.2.2 | | |
| 4.2.3 | | |

5. Communications:

| Item | Approved | Deviation |
|-------|----------|-----------|
| 5.1.1 | | |
| 5.1.2 | | |
| 5.1.3 | | |
| 5.1.4 | | |
| 5.1.5 | | |
| 5.1.6 | | |
| 5.2.1 | | |

6. Meter software

| Item | Approved | Deviation |
|-------|----------|-----------|
| 6.1.1 | | |
| 6.1.2 | | |

| | | |
|-------|--|--|
| 6.1.3 | | |
| 6.1.4 | | |
| 6.1.5 | | |
| 6.1.6 | | |
| 6.2.1 | | |
| 6.2.2 | | |

7. Anti-tampering features:

| Item | Approved | Deviation |
|-------|----------|-----------|
| 7.1.1 | | |
| 7.1.2 | | |
| 7.1.3 | | |
| 7.1.4 | | |
| 7.1.5 | | |
| 7.2.1 | | |
| 7.2.2 | | |
| 7.2.3 | | |

8. Electrical features and certifications:

| Item | Approved | Deviation |
|------|----------|-----------|
| 8.1 | | |
| 8.2 | | |
| 8.3 | | |
| 8.4 | | |
| 8.5 | | |
| 8.6 | | |
| 8.7 | | |
| 8.8 | | |
| 8.9 | | |
| 8.10 | | |

9. Meter test:

| Item | Approved | Deviation |
|------|----------|-----------|
| 9.1 | | |
| 9.2 | | |
| 9.3 | | |
| 9.4 | | |
| 9.5 | | |
| 9.6 | | |
| 9.7 | | |
| 9.8 | | |
| 9.9 | | |
| 9.10 | | |

10. Property Plates:

| Item | Approved | Deviation |
|-------|----------|-----------|
| 10.1 | | |
| 10.2 | | |
| 10.3 | | |
| 10.4 | | |
| 10.5 | | |
| 10.6 | | |
| 10.7 | | |
| 10.8 | | |
| 10.9 | | |
| 10.10 | | |
| 10.11 | | |
| 10.12 | | |
| 10.13 | | |

11. Sample meters and its Software:

| Item | Approved | Deviation |
|------|----------|-----------|
| 11.1 | | |
| 11.2 | | |
| 11.3 | | |
| 11.4 | | |
| 11.5 | | |
| 11.6 | | |
| 11.7 | | |

12. Installation and maintenance support:

| Item | Approved | Deviation |
|------|----------|-----------|
| 12.1 | | |

13. Meter Data Management System (MDMS):

| Item | Approved | Deviation |
|-------|----------|-----------|
| 13.1 | | |
| 13.2 | | |
| 13.3 | | |
| 13.4 | | |
| 13.5 | | |
| 13.6 | | |
| 13.7 | | |
| 13.8 | | |
| 13.9 | | |
| 13.10 | | |
| 13.11 | | |
| 13.12 | | |

14. Special Requirements:

| Item | Approved | Deviation |
|-------|----------|-----------|
| 14.1 | | |
| 14.2 | | |
| 14.3 | | |
| 14.4 | | |
| 14.5 | | |
| 14.6 | | |
| 14.7 | | |
| 14.8 | | |
| 14.9 | | |
| 14.10 | | |
| 14.11 | | |
| 14.12 | | |
| 14.13 | | |
| 14.14 | | |
| 14.15 | | |
| 14.16 | | |

**TECHNICAL PARTICULARS FOR ITEM NO. (2)
(TO BE COMPLETED BY THE TENDERER)**

| Three Phases CT Connected Meter | | | |
|--|---|-----------------|--|
| NO. | Description | Unit | |
| 1 | Name of manufacturer | | |
| 2 | Country of origin | | |
| 3 | Type of meter | | |
| 4 | Manufacturing License | | |
| 5 | Quality Assurance certificate | | |
| 6 | Standard IEC No | | |
| 7 | Operating Ranges : | | |
| 8 | Temperature | C° | |
| 9 | Humidity | RH | |
| 10 | Rated Voltage | V | |
| 11 | Basic Current Max current | Amp | |
| 12 | Starting current of Ib | Amp | |
| 13 | Short circuit current | Amp | |
| 14 | Active energy class of meter | | |
| 15 | Reactive energy class of meter | | |
| 16 | AC Withstand voltage for 1min IEC No | KV | |
| 17 | Impulse withstand voltage 1.2/50 Micro seconds IEC No | KV | |
| 18 | Burst Test IEC No | KV | |
| 19 | Electro static discharge IEC No | KV | |
| 20 | HF Magnetic field IEC No | V/m | |
| 21 | Type of surge protection | | |
| 22 | Insulation resistance | MΩ | |
| 23 | Total power consumption | VA | |
| 24 | Power consumption in voltage circuit | VA/per phase | |
| 25 | Power consumption in current circuit | VA/per phase | |

| | | | |
|----|--|-----------------|--|
| 26 | Meter constant | Imp per kWh | |
| 27 | Meter dimensions | | |
| 28 | Material of the base (color) | | |
| 29 | Material of the meter cover (color) Material of terminal block cover(color) | | |
| 30 | Material of terminal block connectors | | |
| 31 | Meter weight | grams | |
| 32 | Degree of Protection | | |
| 33 | Min and max Cross section of terminal block holes | mm ² | |
| 34 | No of digits for energy | | |
| | Size of digits | | |
| | Size of display | | |
| | No of available decimal | | |
| | Display contrast | | |
| | LCD rated shelf time | Year | |
| | Is self-diagnostic check available? | | |
| 35 | Type of memory provided | | |
| 36 | Non-volatile memory (Min retention time) | Year | |
| 37 | Backup supply continuous carryover capability (Batteries) | Year | |
| 38 | RTC accuracy | | |
| 39 | Time keeping source available: | | |
| | i: Internal time clock (depend on crystal oscillator) | | |
| | ii: Synchronization to system frequency | | |
| 40 | Optical port IrDA Baud Rate | | |
| 41 | Possibility to connect cellular Modems | Define | |
| 42 | Is the meter IEC62056 compliant? | | |
| 43 | What other protocols used? | | |
| 44 | Is pulse output provided? (Option) - No of pulse outputs | | |
| 45 | Method of pulse output | | |
| 46 | Pulse transmission distance | | |
| 47 | No of control inputs | | |
| 48 | Is the meter "Tamper proof"? How? | | |
| 49 | Is the meter equipped with phase failure | | |

| | | |
|----|---|--|
| | Indicator on LCD? | |
| 50 | Is the meter equipped with Reverse run Indicator on LCD? | |
| 51 | is the meter equipped with phase rotation Indicator on LCD? | |
| 52 | Is the meter equipped with energy direction status Indicator on LCD? | |
| 53 | Is the meter equipped with Communication Indicator on LCD? | |
| 54 | Is the meter equipped with low battery Indicator on LCD? | |
| 55 | Is the meter equipped with terminal cover removing record indicator on LCD? | |
| 56 | Is the meter equipped with bypass indicator on LCD? | |
| 57 | Is the meter communication system prepared for AMI and MDM from multiple vendors? | |
| 59 | What is the IP of the meter? | |
| 60 | Terminal cover dimension according to which IEC or equivalent DIN? | |
| 61 | Is the meter including load profile and maximum demand? | |
| 62 | Possibility to register MD every 30min/monthly | |
| 63 | Is the meter including bush button for manual reading? | |
| 64 | Routine test laboratory | |
| 65 | Type test laboratory | |
| 66 | Expected life time of the meter? What is the proof? | |
| 67 | Could the meter be read when the power is disconnected? | |
| 68 | Test Certificate No | |
| 69 | Name of testing laboratory | |
| 70 | Years of experience of manufacturing the required item (Similar Type) | |
| 71 | Software Features | |
| 72 | Is the software upgrade free of extra charge | |
| 73 | All software features shall be provided in tender offer and in the following rows | |

Manufacturers, Places of Manufacture and Testing for item (2)

| <u>Three Phase CT Connected Meter</u> | | | | |
|---------------------------------------|-------------------------------|--------------|-----------------------|-------------------------------|
| Item No. | Description | Manufacturer | Place of Manufacturer | Place of Testing & Inspection |
| 1. | Current Sensors | ..... | ..... | ..... |
| 2. | Power Supply Board | ..... | ..... | ..... |
| 3. | CPU | ..... | ..... | ..... |
| 4. | Memory | ..... | ..... | ..... |
| 5. | RAM | ..... | ..... | ..... |
| 6. | LCD | ..... | ..... | ..... |
| 7. | Push Buttons | ..... | ..... | ..... |
| 8. | Communication Boards | ..... | ..... | ..... |
| 9. | Terminals | ..... | ..... | ..... |
| 10. | batteries | ..... | ..... | ..... |
| 11. | Material of meter cover(Case) | ..... | ..... | ..... |
| 12. | Material of terminal cover | ..... | ..... | ..... |
| 13. | IrDA communication Port | ..... | ..... | ..... |
| 14. | Optical Communication port | ..... | ..... | ..... |
| 15. | RS 485 Port | | | |

| | | | | |
|-----|----------------|--|--|--|
| .16 | cellular Modem | | | |
|-----|----------------|--|--|--|

REFERENCE LIST for item 2

| PURCHASER | COUNTRY OF PURCHASER | DATE OF DELIVERY | ORDERD QUANTITY | PURCHASER CONTACT ADDRESS |
|-----------|----------------------|------------------|-----------------|---------------------------|
| | | | | |

Item 2: (110 V L-L), THREE PHASE ELECTRONIC METER, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 3-wire C.T V.T operated.

Reference Standard: International Standard specifications IEC 62052/53 or an equivalent IEC specification.

Any additional features on the offered meter which not mentioned or requested in our tender will go through IDECO's study and analysis by IDECO engineers to be evaluated and it could considered a deviation.

1. Climate Conditions:

The following is applicable unless otherwise is mentioned:

| | |
|--|----------------------------------|
| 14. Maximum Ambient Temperature | 75 C° |
| 15. Minimum Ambient Temperature | -10 C° |
| 16. Design temperature | 45 C° |
| 17. Maximum daily range of air temperature | 20 C° |
| 18. Maximum Wind Pressure | 420 n/m ² |
| 19. Ice Thickness | 10 mm. |
| 20. Snow Falls | 1-4 days – 30 cm. |
| 21. Site altitude | 0-1400m ASL |
| 22. Average annual rainfall | 40cm during November–April |
| 23. Relative humidity in the range | 90%. |
| 24. Average number of thunder storms | 15 days / year |
| 25. Prevailing wind winter average daily approximately | 5-8 m/s, with gust up to 30 m/s. |
| 26. Summer wind average afternoon 10-13 m/s, during morning generally light and variable, gust speed up to 30 m/s. | |

2. Meter rated parameters:

The three phase meter shall be of Class 0.5s for indoor and outdoor applications with:

- Rated current of 5-10 A
- Rated Voltage of 110 ± 10% V
- Frequency 50 HZ
- Electromagnetic Compatibility of 15kV according to IEC61000-4-2
- Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC61000-4-3
- Fast Transient Burst 4 kV for main circuits, 2 kV for auxiliary circuits, to IEC61000-4-5
- Insulation strength of 4kVAC at 50Hz for 1 minute
- Insulation strength Pulse Voltage 1.2/50microsec, 8kV main circuits, 6 kV auxiliary circuits according to IEC 62052-11
- Impulse withstands voltage of (8kV)
- **The meter accuracy must be equal or less than 0.5 % in all accuracy tests (different value of current and power factor)**

3. Meter tariff, billing and display:

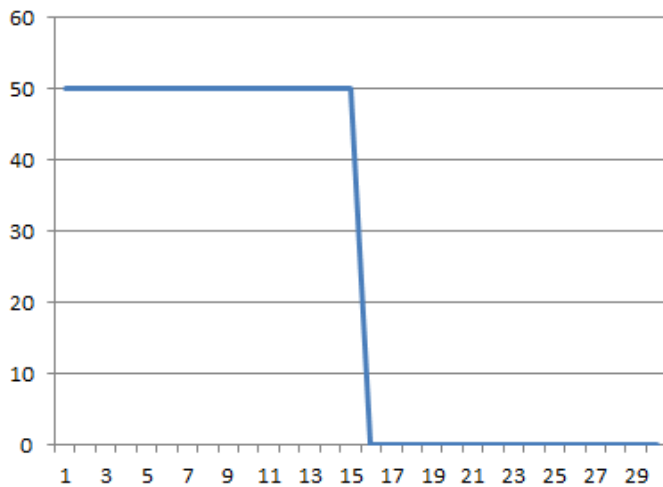
- 3.1. (110 V L-L), Three Phase Electronic Meter, (5)10 A, Multi Tariff (4 Tariffs), Class 0.5s KWH, Class 1 KVARH, 3-wire C.T V.T operated, with 12 seasons and 12 maximum demand /year. High accuracy and long-term measurement stability.
- 3.2. Energy shall be measured using 3 V.T's and 2 C.T's.
- 3.3. Active energy (import, export), as IEC 62053-22, IEC 62053-21, class 0.5s
- 3.4. Reactive energy (4 quadrants and combined quadrants), IEC 62053-23, class 1.
- 3.5. Current average, maximum and cumulative demand measurement
- 3.6. Instantaneous and historical measurements of V, I, PF, phase angles, demands, frequency...etc.
- 3.7. The meter shall measure the energy with daily rates (up to four rates). And the purchaser shall have ability to easily configure these four rates at the desired times of day.
- 3.8. The meter shall be able to provide historical data, (billing periods for not less than 12 months). The meter shall be programmable to show these historical data registers on LCD, beside the possibility to read them through optical probe or remotely.
- 3.9. Tenderers are requested to quote meter with a maximum demand, the meter shall be able to be programmed to activate the maximum demand within the specified daily period for a specific season. So the meter shall be able to be programmed so that the year will be divided into seasons (up to 12 seasons, dates are changeable every year) and the maximum demand shall be activated in a specified daily-period of times (also changeable) for each season. And record the maximum demand in a specific register and with the ability to show it on the LCD, the maximum demand interval should be programmable and the default setting is 30 minutes.

The maximum demand is not the instantaneous maximum value for each interval it has an equation and it shall be computed as follows:

$$\text{The Demand For Each Interval (KW)} = \frac{\text{The Energy in This Interval (KWH)}}{\text{Time of Interval (H)}}$$

Our interval is always 30 minutes = 0.5 Hour.

For example if the power is 50 KW for the first 15 minutes and 0 KW for the second 15 minutes.



The Energy for This Interval = $50 \text{ KW} \times 0.25 \text{ H} = 12.5 \text{ KWH}$

The Demand for This Interval (KW) = $\frac{12.5 \text{ KWH}}{0.5 \text{ H}} = 25 \text{ KW}$

- 3.10. The meter shall store the load profile in the meter memory. And it shall consist of energy and power readings, along with the instantaneous measurement like voltages, currents and power factor. With the ability to choose (using the software) what the meter should include in the load profile and configure the time interval for these readings. The default time interval is 30 minutes.
- 3.11. All of the measurement and registers shall be compatible with Obis-Code registers, and the meter shall have the ability to show any stored register on the LCD, and the OBIS code should be shown with the registers on LCD, For example, import active energy (1.8.0), last month import active energy (1.8.0.1), and that should be approved by IDECO.
- 3.12. The meter shall include a built-in RTC (Real Time Clock) of base time shall be taken from crystal oscillator. To provide the time and date for the meter and display it on the LCD and use it to meet the tariff scheme mentioned in Item (3.7), the historical readings mentioned in Item (3.8), the maximum demand in Item (3.9), the load profile in Item (3.10), and any other needs. And it shall continue to operate during power failure.
- 3.13. The meter's register shall reset to Zero after reaching the maximum range 9999999.9 and all digits should always appear. And not be permitted to reset to zero under any circumstances. Before reaching the maximum range.
- 3.14. A programmable auto cycle display with a programmable switch-over (0-30 sec.) between the different registers must be provided and it should be programed separately from the push button option.
- 3.15. The meter shall indicate on the LCD the availability of the three phases and the loss of any phase. And the direction of each current (imports or export).
- 3.16. The meter shall support daylight saving according to Jordanian standard. And it shall be possible to change date, time as well the tariff program with laptop, notebook or a simple HHU.

- 3.17. A high contrast, fully electronic and digital Liquid Crystal Display (LCD) must be provided with light illumination and uses information on the display to indicate the active element,
- 3.18. The display should be very clear (day and night) with not less than 8 digits excluding the hidden 4 decimals for testing, and all 8 main digits should be continuous showing on the screen
- 3.19. The digit dimension is preferred to be not be less than 11 X 5.5 mm
- 3.20. The meter shall be able to be configured with the ratios of the C.T and V.T and the ability to present the data on the LCD.
- 3.21. The meter shall provide daily information on meter readings with multi tariffs registers (import and export) with maximum demand.

4. Meter hardware:

- 4.1. A push button for reading the display manually must be provided. And this list of registers shall be separate from the auto cycle mentioned in Item (3.14).
- 4.2. The meter registers shall have the facility to be read even if the power is not present.
- 4.3. The Non-volatile memory minimum retention time shall not be less than 20 Years which has to be confirmed by an official certificate. And the memory is preferred to be replaceable and compatible with a slot (adapter) provided by supplier, so that the memory can be read externally in case of meter failure or damaging.
- 4.4. The battery shall be changeable easily (inside sealed cover) and the lifetime shall not be less than 15 years which has to be approved and the meter shall continue to operate even if the battery is lost for any reasons. The battery should not be used if the meter is connected to power.
- 4.5. The lifetime of the offered meter has to be not less than (20 years) which has to be confirmed by an official certificate.
- 4.6. The lifetime of the offered LCD has to be not less than (20 years) which has to be confirmed by an official certificate.
- 4.7. During the meter lifetime it doesn't require any calibration or maintenance, stability of meter accuracy should be guaranteed. The lifetime of the meter has to be confirmed by an official organization. A certificate to this effect has to be provided.
- 4.8. The meter is preferred be equipped with four LED's operation (alarm and power operation can be use one LED so thee total will be 3 LEDS):

- 4.8.1. Active Energy Impulse LED for meter testing, and the meter constant shall be in from of impulse/ KWh. And this LED should have not less than 2 cm from any other LED.
- 4.8.2. Reactive Energy Impulse LED for meter testing, and the meter constant shall be in from of impulse/ KVARh. And this LED should have not less than 2 cm from any other LED.
- 4.8.3. Alarm LED: the description is in point 7.0.
- 4.8.4. Power LED
- 4.9. The meters shall not generate waves or harmonics which might affect the neighboring electrical instruments or super imposed on power lines and shall not be affected by power failure that may prevent control of the meters.
- 4.10. The meter shall have a case which provides an ingress protection rating of IP54 in accordance with IEC 60529:1989 with extended terminal cover having rigid and homogeneous thickness without knock out grooves (weak areas) to prevent access to the feeding wires.
- 4.11. The enclosures of meters should be capable of being easily sealed with lead and two steel wire seals (the seals will supplied and installed by IDECO as per our stander of 1mm diameter for each), one of them is a large plastic sealed, and the hole shall be with suitable size for using two wire seals easily.
- 4.12. The extended terminal cover shall be capable of being easily sealed with lead and wire large plastic seal to prevent any accessing to the feeding wires.
- 4.13. Materials of the main cover of the meter shall be non-transparent color and the terminal cover shall be clear **transparent** both cover must be high resistive to fire hazards. It should be of sufficient strength to protect the working parts and to be adequate to protect the meter against mechanical injury. It shall not be affected by chemical materials used for cleaning purposes specially the meter's LCD. The quality of materials should be fully complying with the all tests according to IEC.
- 4.14. The meter should be of the front-connected type with a hanging device provided and fitted on the base compatible with test rack fixings.
- 4.15. The equipment in this specification should be capable of accepting any size of conductor in the range 1.5 mm² up to 6 mm² of stranded copper or Aluminum conductor PVC or XLPE insulated and it should be compatible with our test bench.
- 4.16. The width of the terminal block shall not exceed 170 mm and according to DIN 43857. The terminals shall be made of nickel- coated brass (bimetallic) material to enable a good electrical contact in hot and humid conditions. The fixing screws shall also be nickel- coated brass material to enable a good contact and prevent loosening at heat. And the terminal should be compatible with our test bench (Zera). And the screw position should be ready to test.
- 4.17. The meter base, terminal cover of extended type and main cover should be made of suitable rigid plastic material of adequate mechanical and insulation qualities and the meter connection drawing should be provided under terminals cover.
- 4.18. Each supplied meter shall have a serial number as our stander for numbering printed in numbers and bar-code 128 Type-C on property plate at the front of the meter to be easily read by IDECO hand held unit "Bar-Code reader". The serial number should be parameterized inside each meter to express its unique identity by manufacturer.

- 4.19. The tenderer must state the power consumption for the meter with its internal circuits. And also state the power consumption for every compatible modem.
- 4.20. There shall be two batteries for the meter. One for the RTC circuit, and one for the main meter functions. And the minimum capacity for each one must be at least 1.2 Ah. Using larger battery capacity or using CMOS-RAM instead of an EEPROM to save the RTC will be highly recommended.

5. Communications

5.1.0 First priority Features:

- 5.1.1 The meter shall include two ways IrDA optical communications port (According to IEC62056-21/IEC61107 Mode C). Contractor shall provide software open protocol license which enable the user to make easy read and write from and to the meter with magnetic essay connection probe. And it couldn't be deactivated in any condition but it should have sealed cover, high security data transfer is must.
- 5.1.2 The meter shall have capability to operate plug and play variable IP 4/3/2G cellular modem (according to Jordanian requirements) with removable external antenna that allows two way communication with the meter using an external modem. According should as per IEC 62056/DLMS HDLC mode) with sealed screw cover and suitable place which is prepared for AMI(Advanced Metering Infrastructure)and provided with all suitable possible bidirectional communication modules to transmit and receive data by means of. The meter shall be equipped with a power supply for the modem.
- 5.1.3 The meter communication protocol shall be an (high security) open protocol according to the IEC62056-21 and DLMS Communication Protocol which accepts the communication with multiple software from different vendors (this should be approved) which enables Automatic Meter Management (AMM) such as (meter reading, parameterization, diagnostic. etc...).

- 5.1.4 The DLMS certification must be provided to approval that meters are passed DLMS test.
- 5.1.5 The modem antenna should have both option internal or external and the meter should be ready for both and the internal antenna should be completely inside the meter case.
- 5.1.6 Cellular modems should be as per Jordanian requirements.

5.2.0 Second Priority Features:

- 5.2.1 Input/output module: Maximal combination is 4 inputs and 8 outputs. Inputs and outputs are freely programmable the meter should be ready to connect and control mortise MCCB using suitable way and it should explained and approved.

6 Meter software:

- 6.1. The meter's software shall be supplied with the meters with open license and security keys and programming cable for at least 15 users, this software should be user-friendly including all controllable parameterization features such as multi-level of security for down loading and up loading the data USB key is required . The software module could be upgraded or modified upon to IDECO requests without extra charges while (IDECO) owns all software management properties. The software shall be submitted with very detailed user manual along with the sample which should be submitted with the offer this software should have individual user accounts and it should communicate with the meters using IR and also remotely communication with free license for the all supplied meter quantity. (The vendor should make any required modification on the software within 24 months after delivery with maximum 30 days to complete any requested modification after IDECO send it to his official address (email or fax)).
- 6.2. The meter shall be able to store all events happened with their time stamp in the log book such as (power up, power down, tampering events, over voltage... etc.). This event parameter should be programmable for the value and the duration (for some event like over voltage or sag etc.) which should be up to 60 minutes interval.
- 6.3. The software features in the **Special Requirements** are required.

6.4. The software shall be compatible to connect to the meters remotely through cellular, and the tenderer should supply all the required to run the software using IDECO servers to support all the supplied quantity of meters.

6.5. Its highly preferred to have an independent security level in the software (with a separate password) regarding the CT and VT ratio. The default password shall be hard to remember and the manufacturer should provide IDECO with the password upon delivery.

6.6. The software and the meter are preferred to have a log, where it shall store the user, meter number, date & time, and the type of modification accrued.

7. Anti-tampering features

7.1. The meter shall be a high-level anti-tampering. This meter should detect and record the energy (energy recording in such cases should be fully explained from the tenderer and approved by IDECO) and event with time stamp for the following tampering cases:

- Disconnecting one or more phases.
- Bypassing the meter by connecting or jumpering C.T. terminals.
- Switching between phases.
- Changing the sequence of voltage or current signals.
- Invert or reverse the C.T. terminals.
- High magnetic field exposure.
- Main and terminal cover opening.
- Other anti-tampering features are highly preferred.
- The meter shall be provided with alarm flag displayed (not symbols) on LCD to indicate for any of the above tampering cases and record the date and time of this case besides storing all the events in the meter's memory and it shouldn't disappear by itself but to use PC software to clear it.

- 7.2. The meter shall be completely tamper proof design and construction, facilitated with up-to-date anti-fraud protection with all fraud events that shall be record in meter's history in the log book with their time stamp.
- 7.3. The meter records the accurate consumption under reverse run on 15.8.0 conditions but the meter should register import on 1.8.0 and export energy on 2.8.0.
- 7.4. The meter should not be influenced by external strong DC or electrostatic DC discharge up to 100 KV.
- 7.5. In addition to mentioned alarm flags the meter should have Alarm LED and it preferred to be programmable when it should be on, IDECO shall approve this operation.

8. Electrical features and certifications:

- 8.1. KEMA or (relevant and IDECO accepted lab) Certificate should be shown for the same meter and IDECO should be provide from the vendor and to witness type test in the factory.
- 8.2. The tenderer/manufacturer of the meters offered shall supply proof that he has been manufacturing meters similar to those specified in this document, for at least 5 years. The Tenderer shall submit with his offer a list of supply Authorities using similar meters to those offered as references and the current re-certification period required by law in the country of manufacturer. The Tenderer shall also submit evidence and certificate from KEMA or SGS that the meters can operate for at least 20 years and remain within limits of error of $\pm 1\%$ during that time. This has to be confirmed by an official certificate/letter from an Official Institute like OFGEM/GB, or similar international organization.
- 8.3. The tenderer/manufacturer of the meters offered shall supply proof that his meter is used on AMI project and a latter from the customer should be present in the offer.

- 8.4. The meter shall not be affected by power failure, as it contains early detection means of power failure, which permits control circuits to store consumption data, and configure the circuit for this failure.
- 8.5. The metering element is shielded against external magnetic fields and electrostatic discharge, and protected against over voltage and high frequency disturbances.
- 8.6. The meters shall not generate electromagnetic waves or harmonics which might affect the neighboring electrical instruments or superimpose on power lines.
- 8.7. The Tenderer must submit with his offer all the specifications, software manual, indicating ratings, weights, dimensions and time current characteristics of the offered materials
- 8.8. Meters shall be calibrated at time of manufacturing. For security reasons it should not be possible to do any calibration at site nor at the test station of the purchaser.
- 8.9. However, according to the local rules it must be possible to do regular checking / testing at site with on-site test equipment.
- 8.10. Any presented certificates or approval etc., requested in this tender must be for the same and exact offered meter or components without any deviation and it should be from well-known third part laboratory (and accepted by IDECO) which it KEMA, CESI, SGS, NMI or IPH, any other lab will be subject to evaluation by IDECO and could be accepted or rejected

9. Meter test

- 9.1. All meters supplied against the requirements of this specification will be tested before transfer to storage on IDECO Meter Test Bench, and should any meter found to be outside the specified accuracy tolerance, it will be rejected and the contractor shall supply the relevant number of replacement meters at no cost to the purchaser.
- 9.2. The meter shall be protected against high voltage DC discharge up to 100KV and this should be approved by shock a samples of the meter up to 20 times in two minutes by using 100kv DC Taser and the factory should provide IDECO engineer with this Taser.
- 9.3. The meters shall be factory-calibrated and tested under conditions according to IEC62052- 11 so that when they are tested under the reference conditions stipulated in IEC 62053-11 first Edition 2003, the percentage errors shall be far within the limits as specified in IEC62053-11. Should the meters be re-tested for at a later date, the difference in accuracy readings between the first and

second tests shall not exceed 1%. Furthermore, the meters shall be capable of being transported by road to the purchaser's Test Station in Irbid without losing their calibration.

- 9.4. For Certification by Local Authorities, meters shall be tested against a minimum/maximum error limit of the percentage of the test points (loads) specified in IEC 26053 -11 First Edition 2003. The difference between the original test value and the certification value shall not exceed +/-1%.
- 9.5. Power Losses: The losses in each voltage and current circuit shall be measured under reference condition to prove compliance with tables 1 and 2 IEC 62053-11 first Edition 2003.
- 9.6. Heating and Dielectric Tests: Tests shall be carried out to establish compliance with the requirements of clauses 1.3 and 7.4 of IEC62053-11 First Edition 2003. Where these tests have already been carried out on meters identical in design and specification to those included in this contract then full details may be submitted of approval by the Engineer in line of type testing.
- 9.7. Accuracy: Under the condition set out in clause 5.5 of IEC 62053-11 first edition 2003 and after being energized for the appropriate period state therein, the meters shall be listed to establish that the actual percentage error values fall within the limits as set out in clause 1.3 of these specifications.

The mean temperature co-efficient shall be determined for the reference temperature and shall be within the limits. The variations due self-heating should be determined.

The meters shall be factory-calibrated so that when they are tested under the reference condition stipulated corresponding IEC62053-21 and, be retested for accuracy at later date, the difference in accuracy reading between the first and second tests shall not exceed 1%. Furthermore, the meters shall be capable of being transported by road to the purchaser's Test station Irbid without losing their calibration.

- 9.8. Insulation Test.
- 9.9. The meters shall be tested at pressure of 4kV for a period of 1 minute between all live terminals and earth.
- 9.10. Any other type or rotten test can be requested by IDECO to do it in the factory or/and to get certification from previous mentioned labs.**

10. **Property Plates:** The meters shall be provided with laser printing label(s) detailing the following:

- 10.1. Meter Type
- 10.2. Manufacturer and year of manufacturing
- 10.3. Voltage, phase(s), wire(s)
- 10.4. Meter Current
- 10.5. Frequency
- 10.6. Accuracy class
- 10.7. Number of pulses per KWH, KVARH

- 10.8. The words "Property Of Irbid District Electricity Co. LTD"
- 10.9. The plate shall carry a serial number (supplied by the purchaser). It shall specify the contract No. (IDECO-**xx/20xx**), and the year of manufacturing, the plate shall also carry a separate serial number from (0000000000) to (0000000000) (the numbers will supplied by IDECO to the factory)
- 10.10. IDECO contract No. **xx/20xx** and stock code 6625-2162.
- 10.11. All packing cartoons and wooden boxes shall carry IDECO contract **No. xx/20xx**
- 10.12. Flags numbers for tampering indication as in section 7.1 (to be approved by IDECO)
- 10.13. Previous data in all Items could be change upon to IDECO request before manufacturing and the manufacturer should have IDECO acceptance on it before manufacturing.

11. Sample meters and its Software:

- 11.1. Non-returnable one Samples meters identical to the offered designs must be hand-carried and submitted with the Tender within 35 days from tender closing date with a presentation at IDECO office. These representative samples will be closely examined and will undergo mechanical, electrical and accuracy tests at the IDECO Test Station in Irbid. Failure of the samples to meet the mechanical and electrical Specifications set out in this Document will entitle the Purchaser to reject the meter. And this sample must comply with all tender requirements.
- 11.2. These samples shall be programmed to meet the previous IDECO Tariff scheme and features.
- 11.3. Full programming software with manual should be submitted with the offer.

- 11.4. The purchaser will go through the configurations of the meter sample and make the proper modification, so the tenderer/manufacture will configure all of the meters to meet the needs of the purchaser.
- 11.5. The sample should be supplied with non-returnable cellular modem tenderer/manufacture and the tenderer shall present real time demo for this modems in IDECO office
- 11.6. Cellular modem full operation should be shown in the presentation using Jordanian SIM card and the meter software.
- 11.7. Any other related mentioned point in the tender shall be in the presentation.

12. Installation and maintenance support.

12.1. The meter shall provide information on the display to support the installer during installation of the meter, such as:

- Measurement of the instantaneous voltage.
- Measurement of the power factor.
- Measurement of the instantaneous current.
- Battery level.
- The direction of the current.

- Phase sequence.

13. Meter Data Management System (MDMS):

The Tenderer should supply a compatible (lifetime free license for the supplied meters) meter data management system (MDMS) with the ability to run all the supplied quantity of meters and it shall have the following specifications:

- 5.1. The system shall monitor all the registers and readings for all the supplied quantity of meters.
- 5.2. The system shall monitor all type of events and alarms, with integrated alarm system.
- 5.3. The system shall have the ability to export reports for all the mentioned data above.
- 5.4. The system shall have the ability to save a historical data for all the mentioned data above. And save the customer details.
- 5.5. This software must be installed in IDECO Servers by the tenderer. And the tenderer shall provide all the support that IDECO needs to run the software.
- 5.6. The system should monitor the online and offline status for all supplied quantity of meters.
- 5.7. The system should provide data about online and offline history.
- 5.8. There shall be a way to import meters to system from excel or other databases.
- 5.9. The system shall have the ability to manage customer information along with meter numbers.
- 5.10. The system shall have the ability to program multiple meters altogether with single order.
- 5.11. Free two year technical support is required.
- 5.12. The supplier should be responsible to install the software in IDECO server with in site training for IDECO engineer.

14. Special Requirements

The Below mentioned requirements shall have a precedence in all of the preceding specifications and requirements, and the tenderer is kindly requested to strictly follow.

- 14.1. Full free software training for 2 IDECO engineers.
- 14.2. The tenderer should provide IDECO with suitable way and equipment to read the memory of any damaged meter such as memory holder to read it through optical probe, and at least three of this hardware should supplied with the tender. And one of them should come with the presentation.

- 14.3. The tenderer should supply 5 optical probe and 5 USB key with the tender
- 14.4. Maintenance instructions: Where the equipment's / materials supplied are subject to maintenance during service the manufacturer shall submit for approval a draft of the recommended maintenance instructions. After approval the supplier shall supply any further copies required by the Engineer. These maintenance instructions shall be provided before the taking over of any part of the equipment.
- 14.5. Each shipment required based on (request for delivery) shall be inspected in country of origin by two IDECO engineers, and all Inspection Costs (Visa, Air Tickets, good Hotel, Accommodation, Transportation , etc.) of at least (2) IDECO representative engineers, at the manufacturer house, for each purchase order to ensure the proper handling and operation of the supplied materials is required. And contractor is to handle all related costs. which should be included with the offer
- 14.6. if visit to a factory is required for evaluation purposes before signing the agreement, the tenderer must do all necessary arrangement for this visit; the related cost of visit by IDECO team will be borne by the manufacturer
- 14.7. The vendor should have supplied at least 500 meter of the same type for Middle East or Europe or USA market and that should be approved by the customer.
- 14.8. The material safety data sheet (MSDS) of all equipment's / materials is required to be submitted with the offer.
- 14.9. The meter should have the following sticker with size of 8 cmx3cm on the both side of the meter and it should be paper with PE layer cover and it Must be resistant to moisture and water and it should be cracked and damaged if it is removed one-time.



كهرباء إربد
Irbid Electricity

تنبيه عام



إن فتح غطاء العداد قد يعرضك للغرامة المالية والمسائلة القانونية وقد
يعرضك لخطر الصعقة الكهربائية.

- 14.10. The meter Main Components Manufacturer should be only from short list below and that should be approved.
- 14.11. The meter programing and configurations should be approved by IDECO engineer before shipping.
- 14.12. The manufacturer should provide all physical and technical specifications for all kind of modems, and the meter shall be compatible with other kinds of modems.
- 14.13. The tenderer should include PDF (text) softcopy (not scanned) for the offer.
- 14.14. The vendor should supply all needed support to run the meter on third party MDM.
- 14.15. The software shall have the next features (this doesn't cancel any previous mentioned features):

1. Introduction

1.1 Purpose

The purpose of this document is to give a detailed description of the requirements for the “Meter Software”. It will illustrate the purpose and complete declaration for the development of system. It will also explain system constraints, interface and interactions with other external applications. This document is primarily intended to be reference for developing the first version of the system. And later upgrade to meet the approval of the purchaser.

1.2 Definitions

| Term | Definition |
|---------------------|--|
| User | Someone who interacts with the software. |
| Admin/Administrator | System administrator who is given specific permission for managing and controlling the system. |
| Web-Portal | A web application which present special facilities for restaurant owner |
| cellular | General Packet Radio Service |
| | |

2. Specific requirements

This section will give an overview of the whole system. The system will be explained in its context to show how the system interacts with other systems and introduce the basic functionality of it.

2.1. Reading Registers

The meter software shall be compatible with the OBIS code for IEC 62056 standard protocol. And it shall have all of the registers stated in the code. We shall have 3 list of registers; LCD auto scrolling, LCD Button scrolling and readout list that can be read via optical probe or other communications methods.

2.2. Events

The software should have the ability to configure and read the stored event in the meter. And the following events shall be recorded.

- **Standard Event:**

- Programing event
- Firmware upgrade succeed
- RTC change
- Login failed(including password error)
- Tariff change
- FLASH failure
- Low battery
- Clear event record

- **Power Grid Event:**

- Power off for long time
- Power off for short time
- Current unbalance
- Voltage t unbalance
- Energy reverse of phase A/B/C
- Current lost of phase A/B/C
- Sag of phase A/B/C (level 1)
- Swell of phase A/B/C(level 1)
- Sag of phase A/B/C (level 2)
- Swell of phase A/B/C(level 2)
- Reversed phase sequence
- Incorrect phase sequence

- **Anti-Tamper Event**

- Meter Terminal cover open
- Meter cover open

- Big magnetic field influence
- Module remove
- Reverse Polarity
- Low battery
- Disconnecting one or more phases.(bypassing)
- High voltage DC discharge.
- ETC

- 2.3. The software shall have the ability to configure every parameter or specification stated in the meter tender.
- 2.4. The software shall import and export parameter setting to external files for the purpose of saving, sharing and storing. And to add a protection feature; so that any saved file (containing the configuration) cannot be edited or modified to prevent any errors.
- 2.5. Configuring multiple meters is preferred to be available in the software, so that the purchaser shall have the ability to enter the serial numbers of the specified meters and then program them with the same configurations using one order.
- 2.6. The software shall be able to configure the state of the meter relay in all the different communication methods stated in the tender.
- 2.7. The meter software shall have the ability to export all readings, load profile and event parameter to external document files supported with Microsoft Windows and Office.
- 2.8. The software shall have the ability to generate reports and graphs to meet the desires of the purchaser.
- 2.9. The software shall have a log, where it shall store the user, meter number, date & time, and the type of modification accrued.
- 2.10. The software shall be able to interchange data, configurations, and orders with other systems like AMI, billing software, and MDM.

Main Components Manufacturer Reference List

(To be completed by The Tenderer, Only the Reference List Manufacturer is qualified in this Tender) - **Schedule No. (9)**

Any mentioned supplier in the table could be accepted to supply any component in the table except the MCU it must be from on of the shortlisted supplier which mentioned in front of it .

| Item No. | Description | Reference Manufacturer and Place of manufacture | | Offered component manufacturer | Offered component place of manufacture |
|----------|-----------------------|---|---------|--------------------------------|--|
| 1 | SMT Resistance | TDK - Japan YAGEO - Taiwan UniOhm - Taiwan Murata - Japan Nippon Chemi-Con - Japan RUBYCON - Japan ST Microelectronics - Europe Microchip - USA Maxim Microelectronics - USA Texas Instruments - USA Microchip - USA ON Semiconductor - USA JRC - Japan KDS - Japan SEIKO - Japan | | | |
| 2 | SMT Capacitor | | | | |
| 3 | SMT Filter | | | | |
| 4 | Electronics Capacitor | | | | |
| 5 | MCU | | | | |
| 6 | E2PROM | | | | |
| 7 | FLASH ROM | | | | |
| 8 | RS485 Chip | | | | |
| 9 | POWER REGULATOR | | | | |
| 10 | CRYSTAL OSCILLATOR | | | | |
| 11 | BATTERY | SAFT | France | | |
| | | Panasonic | Japan | | |
| | | tadiran | germany | | |

Manufacturers, Places of Manufacture and Testing
Schedule No. (8)

| <u>Three Phase CT Connected Meter</u> | | | | |
|--|-------------------------------|---------------------|------------------------------|--|
| Item No. | Description | Manufacturer | Place of Manufacturer | Place of Testing & Inspection |
| 1. | Current Sensors | ..... | ..... | ..... |
| 2. | Power Supply Board | ..... | ..... | ..... |
| 3. | CPU | ..... | ..... | ..... |
| 4. | Memory | ..... | ..... | ..... |
| 5. | RAM | ..... | ..... | ..... |
| 6. | LCD | ..... | ..... | ..... |
| 7. | Push Buttons | ..... | ..... | ..... |
| 8. | Communication Boards | ..... | ..... | ..... |
| 9. | Terminals | ..... | ..... | ..... |
| 10. | batteries | ..... | ..... | ..... |
| 11. | Material of meter cover(Case) | ..... | ..... | ..... |
| 12. | Material of terminal cover | ..... | ..... | ..... |
| 13. | IrDA communication Port | ..... | ..... | ..... |
| 14. | Optical Communication port | ..... | ..... | ..... |
| 15. | RS 485 Port | | | |

| | | | | |
|-----|----------------|--|--|--|
| .16 | cellular Modem | | | |
|-----|----------------|--|--|--|

**TECHNICAL PARTICULARS FOR ITEM NO. (1)
(TO BE COMPLETED BY THE TENDERER)**

Schedule (7)

| Three Phases CT Connected Meter | | | |
|--|---|------|--|
| NO. | Description | Unit | |
| 1 | Name of manufacturer | | |
| 2 | Country of origin | | |
| 3 | Type of meter | | |
| 4 | Manufacturing License | | |
| 5 | Quality Assurance certificate | | |
| 6 | Standard IEC No | | |
| 7 | Operating Ranges : | | |
| 8 | Temperature | C° | |
| 9 | Humidity | RH | |
| 10 | Rated Voltage | V | |
| 11 | Basic Current Max current | Amp | |
| 12 | Starting current of Ib | Amp | |
| 13 | Short circuit current | Amp | |
| 14 | Active energy class of meter | | |
| 15 | Reactive energy class of meter | | |
| 16 | AC Withstand voltage for 1min IEC No | KV | |
| 17 | Impulse withstand voltage 1.2/50 Micro seconds IEC No | KV | |
| 18 | Burst Test IEC No | KV | |
| 19 | Electro static discharge IEC No | KV | |
| 20 | HF Magnetic field IEC No | V/m | |
| 21 | Type of surge protection | | |
| 22 | Insulation resistance | MΩ | |

| | | | |
|----|--|-----------------|--|
| 23 | Total power consumption | VA | |
| 24 | Power consumption in voltage circuit | VA/per phase | |
| 25 | Power consumption in current circuit | VA/per phase | |
| 26 | Meter constant | Imp per kWh | |
| 27 | Meter dimensions | | |
| 28 | Material of the base (color) | | |
| 29 | Material of the meter cover (color) Material of terminal block cover(color) | | |
| 30 | Material of terminal block connectors | | |
| 31 | Meter weight | grams | |
| 32 | Degree of Protection | | |
| 33 | Min and max Cross section of terminal block holes | mm ² | |
| 34 | No of digits for energy | | |
| | Size of digits | | |
| | Size of display | | |
| | No of available decimal | | |
| | Display contrast | | |
| | LCD rated shelf time | Year | |
| | Is self-diagnostic check available? | | |
| 35 | Type of memory provided | | |
| 36 | Non-volatile memory (Min.retention time) | Year | |
| 37 | Backup supply continuous carryover capability (Batteries) | Year | |
| 38 | RTC accuracy | | |
| 39 | Time keeping source available: | | |
| | i: Internal time clock (depend on crystal oscillator) | | |
| | ii: Synchronization to system frequency | | |
| 40 | Optical port IrDA Baud Rate | | |
| 41 | Possibility to connect cellular | Define | |
| 42 | Is the meter IEC62056 compliant? | | |
| 43 | What other protocols used? | | |

| | | |
|----|---|--|
| 44 | Is pulse output provided? (Option) - No of pulse outputs | |
| 45 | Method of pulse output | |
| 46 | Pulse transmission distance | |
| 47 | No of control inputs | |
| 48 | Is the meter "Tamper proof"? How? | |
| 49 | Is the meter equipped with phase failure Indicator on LCD? | |
| 50 | Is the meter equipped with Reverse run Indicator on LCD? | |
| 51 | is the meter equipped with phase rotation Indicator on LCD? | |
| 52 | Is the meter equipped with energy direction status Indicator on LCD? | |
| 53 | Is the meter equipped with Communication Indicator on LCD? | |
| 54 | Is the meter equipped with low battery Indicator on LCD? | |
| 55 | Is the meter equipped with terminal cover removing record indicator on LCD? | |
| 56 | Is the meter equipped with bypass indicator on LCD? | |
| 57 | Is the meter communication system prepared for AMI and MDM from multiple vendors? | |
| 59 | What is the IP of the meter? | |
| 60 | Terminal cover dimension according to which IEC or equivalent DIN? | |
| 61 | Is the meter including load profile and maximum demand? | |
| 62 | Possibility to register MD every 30min/monthly | |
| 63 | Is the meter including bush button for manual reading? | |
| 64 | Routine test laboratory | |
| 65 | Type test laboratory | |
| 66 | Expected life time of the meter? What is the proof? | |
| 67 | Could the meter be read when the | |

| | | |
|----|---|--|
| | power is disconnected? | |
| 68 | Test Certificate No | |
| 69 | Name of testing laboratory | |
| 70 | Years of experience of manufacturing the required item (Similar Type) | |
| 71 | Software Features | |
| 72 | Is the software upgrade free of extra charge | |
| 73 | All software features shall be provided in tender offer and in the following rows | |

Technical approval table

The tenderer must fill the data in the next tables

1. Climate Conditions:

| Item | Approved | Deviation |
|------|----------|-----------|
| 1 | | |

2. Meter rated parameters:

| Item | Approved | Deviation |
|------|----------|-----------|
| 1 | | |

3. Meter tariff, billing and display:

| Item | Approved | Deviation |
|------|----------|-----------|
| 3.1 | | |
| 3.2 | | |
| 3.3 | | |
| 3.4 | | |
| 3.5 | | |

| | | |
|------|--|--|
| 3.6 | | |
| 3.7 | | |
| 3.8 | | |
| 3.9 | | |
| 3.10 | | |
| 3.11 | | |
| 3.12 | | |
| 3.13 | | |
| 3.14 | | |
| 3.15 | | |
| 3.16 | | |
| 3.17 | | |
| 3.18 | | |
| 3.19 | | |
| 3.20 | | |
| 3.21 | | |

4. Meter Hardware:

| Item | Approved | Deviation |
|------|----------|-----------|
|------|----------|-----------|

| | | |
|------|--|--|
| 4.1 | | |
| 4.2 | | |
| 4.3 | | |
| 4.4 | | |
| 4.5 | | |
| 4.6 | | |
| 4.7 | | |
| 4.8 | | |
| 4.9 | | |
| 4.10 | | |
| 4.11 | | |
| 4.12 | | |
| 4.13 | | |
| 4.14 | | |
| 4.15 | | |
| 4.16 | | |
| 4.17 | | |
| 4.18 | | |

| | | |
|------|--|--|
| 4.19 | | |
| 4.20 | | |

5. Communications:

| Item | Approved | Deviation |
|-------|----------|-----------|
| 5.1 | | |
| 5.2 | | |
| 5.3 | | |
| 5.4 | | |
| 5.5 | | |
| 5.6 | | |
| 5.2.1 | | |

6. Meter software

| Item | Approved | Deviation |
|------|----------|-----------|
|------|----------|-----------|

| | | |
|-----|--|--|
| 6.1 | | |
| 6.2 | | |
| 6.3 | | |
| 6.4 | | |
| 6.5 | | |
| 6.6 | | |

7. Anti-tampering features:

| Item | Approved | Deviation |
|------|----------|-----------|
| 7.1 | | |
| 7.2 | | |
| 7.3 | | |
| 7.4 | | |
| 7.5 | | |

8. Electrical features and certifications:

| Item | Approved | Deviation |
|------|----------|-----------|
| 8.1 | | |
| 8.2 | | |
| 8.3 | | |

| | | |
|------|--|--|
| 8.4 | | |
| 8.5 | | |
| 8.6 | | |
| 8.7 | | |
| 8.8 | | |
| 8.9 | | |
| 8.10 | | |

9. Meter test:

| Item | Approved | Deviation |
|------|----------|-----------|
| 9.1 | | |
| 9.2 | | |
| 9.3 | | |
| 9.4 | | |
| 9.5 | | |
| 9.6 | | |
| 9.7 | | |
| 9.8 | | |
| 9.9 | | |

| | | |
|------|--|--|
| 9.10 | | |
|------|--|--|

10. Property Plates:

| Item | Approved | Deviation |
|------|----------|-----------|
| 10.1 | | |
| 10.2 | | |
| 10.3 | | |
| 10.4 | | |
| 10.5 | | |
| 10.6 | | |
| 10.7 | | |
| 10.8 | | |

| | | |
|-------|--|--|
| 10.9 | | |
| 10.10 | | |
| 10.11 | | |
| 10.12 | | |
| 10.13 | | |

11. Sample meters and its Software:

| Item | Approved | Deviation |
|------|----------|-----------|
| 11.1 | | |
| 11.2 | | |
| 11.3 | | |
| 11.4 | | |
| 11.5 | | |
| 11.6 | | |
| 11.7 | | |

12. Installation and maintenance support:

| Item | Approved | Deviation |
|------|----------|-----------|
| 12.1 | | |
| 12.2 | | |

13. Meter Data Management System (MDMS):

| Item | Approved | Deviation |
|------|----------|-----------|
| 13.1 | | |
| 13.2 | | |
| 13.3 | | |
| 13.4 | | |
| 13.5 | | |
| 13.6 | | |
| 13.7 | | |

| | | |
|-------|--|--|
| 13.8 | | |
| 13.9 | | |
| 13.10 | | |
| 13.11 | | |
| 13.12 | | |

14. Special Requirements:

| Item | Approved | Deviation |
|------|----------|-----------|
| 14.1 | | |
| 14.2 | | |
| 14.3 | | |
| 14.4 | | |
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Item 3: 2/3/4G- Modem Compatible with both Items

1. The modem should be compatible with item 1 and 2.
2. Operating voltage range DC 7V – 35V
3. Standby current less than 55mA@12V
4. Average current 120mA@12V
5. Peak current withstands 2A
6. Normal operating temperature range -35 °C ~ 75°C
7. Limited operating temperature range -40°C ~ -35 °C & 75°C ~ +85°C
8. Limit temperature range for storage and transport -45°C ~ +85°C
9. Maximal transmission power
 - A. Class 4 (33dBm±2dB) for GSM850 and EGSM900
 - B. Class 1 (30dBm±2dB) for DCS1800 and PCS1900

- C. Class E2 (27dBm±3dB) for GSM850 and EGSM900 8-PSK
 - D. Class E2 (26dBm+3/-4dB) for DCS1800 and PCS1900 8-PSK
 - E. Class 3 (24dBm+1/-3dB) for UMTS850/900/1900/2100
 - F. ...
10. Operation frequency as per Jordanian requirements
 11. Antenna type Internal or external
 12. Antenna matched Impedance 50ohm
 13. SIM card Support: Jordanian variable IP SIM
 14. Antenna cable
 - A. Maximal cable length: 3m
 - B. Connector type to GPRS antenna: IPX
 - C. Connector type to GPRS module: SMA
 15. Applicable standards
 - A. Digital cellular telecommunications system (Phase 2+), 2/3/4G
 - B. Universal Mobile Telecommunications System (UMTS)
 - C. CDMA2000 1X/CDMA2000 EVDO Rev.A/CDMA2000 EVDO Rev.B (IMT-MC)
 16. Encryption: DES encryption or transparent transmission
 17. The modem must be compatible with Jordanian standers.
 18. The modem shall have the ability to operate on the optimum frequency and channel choosing one of the three bands (2G, 3G and 4G)

Item 3:

| Item | Approved | Deviation |
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