Document for
Call - Off Contract NO. (63/2022) for supply of

- **Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution.**
- **Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with Ethernet modem.**
- **(400V L-L), Smart Three Phase Direct Electronic Meter, (10) 100 A, Multi Tariff (4Tariffs), Class 1 KWH, Class 2 KVARH, 4-wire Direct Connection with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution.**

Tenderer:
- **Name: ……………………………………**
- **Address: ………………………………...**
- **Telephone / Cellular: ………………………**
- **Fax: ………………………………………...**
- **Website: ………………………………...**
- **E-Mail: …………………………………**
- **Contact Person: ………………………….**

Tender Document Cost = 2,000.00 JD.

إربد - الأردن
تلفون: +962 2 720 1500
+962 2 720 1555
فاكس: +962 2 724 5495
ص.ب: (46) رمز بريدي 21110

Irbid - Jordan | Phone: +962 2 7201500 ,+962 2 7201555 | Fax: +962 2 7245495 | P.O.Box: (46) Zip Code: 21110
Email: Ideco@IDECO.com.jo | Website: www.IDECO.com.jo

1

List of Contents

Invitation to Call - Off Contract
NO. (63/2022)

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 three (3) 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 **November 16, 2022.**

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 bid bond shall be enclosed in the same envelope of the tender and must be delivered to tenders secretary office located in Supplies Department - Tenders Section not later than 2 pm (local time) due **November 16, 2022.**

Item No.	Quantity (pcs) Within 3 years	Description	Stock Code
1	250,000	Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution.	6625-2176
2	50,000	Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with Ethernet modem.	6625-2102
3	10,000	(400V L-L), Smart Three Phase Direct Electronic Meter, (10) 100 A, Multi Tariff (4Tariffs), Class 1 KWH, Class 2 KVARH, 4-wire Direct Connection with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution	6625- 2100
4	1	integration of meters into IDECO's Head-End System.	
5	1	integration of Head-end System into IDECO's Meter Data Management System.	
6	1	Headend system with 3 year S&M for all meters.	

Tender Summary for Tender No. 63/2022

These 3 pages must be completely filled out by the bidder; otherwise it may be a reason for exclusion from the bidding competition:

Name of bidder:			
Address:			
Telephone/Cellular/Fax			
E- Mail			
Contact Person:			
Name of the manufacturer and country of origin:			
The value of the bid bond and the bank issued from:			
The total value of the bid:		**Currency**	
	Total price	**Including Sales taxes & Custom fees.**	
		Exclude Sales taxes& Custom fees.	
	Total price in writing		
Delivery	**Ex-works delivery**		
	Aqaba port delivery		
	Ideco stores delivery		
Testing	**Place of manufacturing**		
	Place of testing		
Cost for inspection & testing:			

Official signature and seal / Bidder:

Irbid Electricity Company Use:

<u>**Chairman of the Committee**</u>   <u>**Deputy Chairman of the Committee**</u>

<u>**Committee member**</u>   <u>**Committee member**</u>   <u>**Committee member**</u>

<u>**Committee member**</u>   <u>**Committee member**</u>

Departures

Departures from	Technical specifications	Required	offered
	Special requirements	Required	offered

Official signature and seal / Bidder

1- **General Condition: We committed to implementing all items mentioned in the general conditions within the bid document number (   ), and the subcategories of these items.**

2- **Tendering Instructions: We committed to implementing all items mentioned in the tendering instructions within the bid document number (   ), and the subcategories of these items.**

3- **General Requirement (Standards and Regulation): We committed to implementing all items mentioned in the general conditions within the bid document number   (   ), and the subcategories of these items.**

4- **Inspection and testing: We committed to implementing all items mentioned in the inspection and testing within the bid document number (   ), and the subcategories of these items.**

5- **Special Requirements: We committed to implementing all items mentioned in the special requirements within the bid document number (   ), and the subcategories of these items.**

6- **We committed to fill out all the required pages with the bid documents, without any discrepancies with similar information contained in the Tender Summary.**

7- **We committed that in case there is a difference in the prices provided by us, the lower price will be approval.**

8- **Based on the above we sign.**

Official signature and seal / Bidder

Irbid Electricity Company Use:

Chairman of the Committee   **Deputy Chairman of the Committee**

Committee member   **Committee member**   **Committee member**

Committee member   **Committee member**

In case there are any comments or additional terms or other offers by the bidder; it must be mentioned or Brief about it in the summary of this page:

Official signature and seal / Bidder

Irbid Electricity Company Use:

<div align="center">

Chairman of the Committee   **Deputy Chairman of the Committee**

Committee member   **Committee member**   **Committee member**

Committee member   **Committee member**

</div>

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 contactor / 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 of meters, 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; 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 <u>for three years</u> 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 <u>three years</u> from the date of signing the contract or until the expiration of the total contract quantity, whichever occurs first.

3.5. The meters may be requested by one purchase order or by several purchase orders depending on IDECO requirements.

3.6. 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 three years from the

date signing agreement, and/or the expiration of the total contract quantity, whichever first occurs.

3.7. IDECO has the complete right to renewal the contract agreement with the contractor (buyer) after three years, accordingly the contractor shall submit and revised his price (for communication operation only) after three years before three months from expiration of agreement between two parties.

3.8. IDECO has the complete right to renewal the contract agreement every three years, if the revised price of the contractor for each three years is accepted by the purchaser.

3.9. 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 cording to the laws for the time being in force in the Hashemite Kingdom of Jordan.

3.10. **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**.**

3.11. **IDECO shall have the absolute right during the validity of the contract up to the last delivery to increase (in such manner that does not exceed 25% of the total contract value) or decrease the quantity of the items or not to order some items.**

3.12. **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**.

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

3.14. **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.

3.15. <u>**Prices: The Tender calls for firm prices, and the tenderer shall submit two offers option (1) & option (2) as mentioned in price summary page (104 & 105), And IDECO has the complete right to award one of them.**</u>

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 material 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. **To calculate the delay deduction of price and follow to item 8.2 above, the vendor shall make beak-down of prices (in a table provided with the offer) for each item separately (meter, modem, and communication), then delay penalty will be calculated on that delayed part (meters and modems) before communication operation, or /and delayed penalty may be calculated in case vendor is delay in communication operation.**

8.4. 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.

8.5. 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.

8.6. If the purchaser fails to accept delivery on due date, he shall nevertheless make any payment conditional on delivery as if the paternal 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.

8.7. 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.

10. Payment:

10.1. 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 document shall be legalized for shipping purposes.**

   b. **100% of the invoice value (meters and modems) to be paid within one month of Receipt of IDECO acceptance certificate and Receipt of goods at IDECO stores).**

   c. **Operation cost of communication for one-year operation will be paid within one month after finished of one year of communication operation.**

   d. **Operation cost of communication for (2nd, 3rd,4th,5th,6th,7th,8th,9th,10th,11th,12th,13th,14th) year operation will be paid within one month after finished of (2nd, 3rd,4th,5th,6th,7th,8th,9th,10th,11th,12th,13th,14th) year of communication operation.**

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 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).**

   b. **100% of the invoice value (meter and modems) to be paid within one month of Receipt of IDECO acceptance certificate and Receipt of goods at IDECO stores).**

   c. **Operation cost of communication for one-year operation will be paid within one month after finished of one year of communication operation.**

   d. **Operation cost of communication for (2nd, 3rd,4th,5th,6th,7th,8th,9th,10th,11th,12th,13th,14th) year operation will be paid within one month after finished of (2nd, 3rd,4th,5th,6th,7th,8th,9th,10th,11th,12th,13th,14th) year of communication operation.**

10.2. 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.

10.3. 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.

10.4. If delivery have 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.

10.5. 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.

10.6. 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.

10.7. 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.

10.8. 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.

11. Guarantee:

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

11.2. 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.

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

11.4. 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.

11.5. 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.

11.6. The Guarantee period is based on the continuous use of the material in service for 24 hours every day.

11.7. 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.

11.8. 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.

11.9. 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.

11.10. The Vendor shall bear all the costs and risks of the transport of defective parts or equipment and their replacements.

11.11. 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.

11.12. Defective parts replaced according to this clause shall be placed at the disposal of the Vendor.

11.13. 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.

11.14. The Vendor's liability does not apply to defects arising out of materials provided, or out of a design stipulated, by the purchaser.

11.15. 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.

11.16. 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.

11.17. 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.

11.18. 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.

12. Relief:

12.1. 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.

12.2. 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.

12.3. 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.

12.4. 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.

12.5. 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.

12.6. 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.

13. Limitation of Damages:

13.1. 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.

13.2. 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.

14. 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.

15. Arbitration and Law Applicable:

15.1. 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.

15.2. 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.

16. Ordering Procedures and Delivery Period

16.1. IDECO Company prefer Delivery period for each call - off purchase order for the required material within (90-120) days, and the priority will be given to the contractor who decrease the delivery period for purchase orders.

16.2. 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.

16.3. 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.

16.4. 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 three 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.

17. Pricing Formula:

The supplier shall obligate to deliver the required materials during three years based on the <u>fixed price</u>. And the contractor shall revise price after three years, and the revised price shall be accepted by the purchaser.

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 tender, and its accompanying documents, filled up as directed, together with the drawings, catalogs, and relevant documents called for, must be enclosed in a secure envelope endorsed (Tender for Contract) No. (**63/2022**) but bearing no other mark from which the identity of the tenderer can be ascertained.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

11. Tenderer must submit country of origin and name of manufacturer for the offered goods.

12. The foreign bidders who participate in this tender must submit their bids through a registered local agent or through their registered office in Jordan.

13. 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 submit the JQM certificate with their offer.

14. 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.

15. 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.

16. 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.

17. 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.

18. Tender price shall include all incidental and contingent expenses.

19. 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.

20. 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 (30) days from date of the final awarded letter for purchase order.

21. The performance bond for each call-off purchase order should be valid for period of (15) months from the date of the purchase order.

22. If the contractor fails for any reason to submit the required performance bond within (30) 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.

23. If the successful tenderer fails for any reason to submit the required performance bond within (30) days, the purchaser has the complete right to reserve the value of materials supplied, and payment will not release till the successful tenderer submit the required performance bond. And the bid bond will not return to the tenderer unless the performance bond shall submit to the purchaser according to tender conditions.

24. 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.

25. Only an offer on the basis of CPT IDECO stores will be accepted, so the tenderer shall provide an offer on the basis of CPT IDECO only. However, tenderer may provide another C&F IDECO STORES or C&F AQABA port or Amman customs basis offer as an alternative offer.

26. **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.**

27. 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.

28. 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.

29. **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.**

30. 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.

31. 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.

32. 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.

33. Where compliance with a specific standard specification is called for the standard specification used shall be that in force at the time of tender.

34. After Awarding Tenders, winner tenderer will be assessment according to quality of good, delivery period, service after sale, and assessment weight will be considered in coming tenders' evaluation.

35. Where the contractor, who was awarded the bid, ceased or failed in implementing the conditions of the bid; IDECO Company has the right to take the appropriate decision on the confiscation of the amount of guarantee or insurance

provided by the bidder upon his participation in the tender, In addition, the IDECO company has the right to the restriction of participation of this bidder in all of the company's bids for the duration seen appropriate.

36. The Irbid Electricity Company shall be entitled to penalize the contractor (late to supply the required materials by tender or tender) the value of the fine due to the Irbid Electricity Company imposed by the Regulatory Authority of the Energy Sector as a result of the company's failure to comply with the required periods in executing the specified subscriber transactions Treatment is the delay of the supplier in the supply of material or materials necessary in the implementation of transactions subscribers.

37. The technical drawing approval shall be submitted during 7 days from order letter date, any delay in this period from contractor side, the delivery period will start after 7 days from order letter. (In case the contractor offered delivery period from order letter date and drawing approval).

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 fir 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 (63/2022).

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 form 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. (**Each group of meters shall be packed by wooden plate and covered by nylon and marked by IDECO Company and tender no. and stock code for meters**).

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 desiccator. 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. (63/2022)

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. (63/2022)

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)

Technical specifications

(Item 1) Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with E-Sim 3/4G modem and communication solution with operational time for 14 years, with AMI solution.

> *Dear tenderer it will be considered that you accept and agree all requirements unless you show comments and deviations of the requirements in your offer*

Reference Standard: International Standard specifications IEC 62052/53, IEC62059, 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 have considered a deviation.

1. Climate Conditions:

The following is applicable unless otherwise is mentioned in our tender:

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 30m/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 meter shall be of Class 1 for indoor and outdoor domestic applications with:

2.1.   Rated current of 10-80 A

2.2.   Rated Voltage of 230 V ± 20%

2.3.   Frequency 50 Hz

2.4.   Relay rated current (min.80 A)

2.5.   Active Energy Class 1.

2.6.   Electromagnetic Compatibility of 15kV according to IEC61000-4-2

2.7.   Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC61000-4-3

2.8.   Fast Transient Burst 4 kV for main circuits, 2 kV for auxiliary circuits, to IEC61000-4-5

2.9. Insulation strength of 4kVAC at 50Hz for 1 minute

2.10. Insulation strength Pulse Voltage 1.2/50microsec, 8kV main circuits, 6 kV auxiliary circuits according to IEC 62052-11

2.11. Impulse withstands voltage of (8kV)
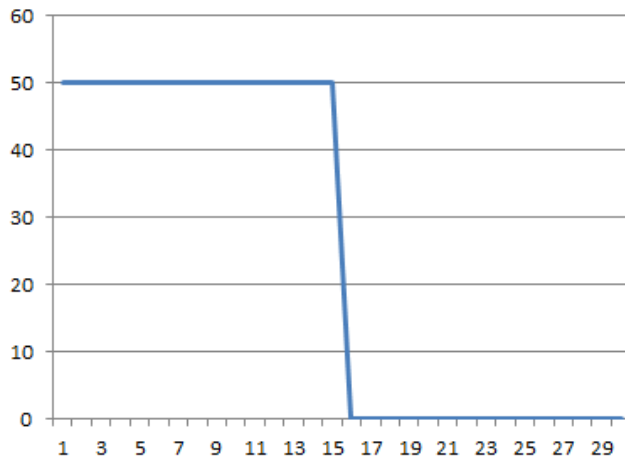
3. Meter tariff, billing and display:

3.1. Active energy (import, export), as IEC 62053-22, IEC 62053-21, class 1

3.2. Reactive energy (4 quadrants and combined quadrants), IEC 62053-23, class 2.

3.3. Current average, maximum and cumulative demand measurement

3.4. Instantaneous and historical measurements of V, I, PF, phase angles, demands, frequency…etc.

3.5. The meter shall measure the import active energy with daily rates (up to four rates) as well as for export active energy. In addition, IDECO shall have ability to easily configure these four rates at the desired times of day.

3.6. The meter shall be able to provide historical data, (billing periods for not less than 12 months). The meter shall be programmable to show the historical data registers on LCD (not less than 2 months), beside the possibility to read them through optical probe or remotely.

3.7. Tenders 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:

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

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 $= 50\ KW \times 0.25\ H\ = 12.5\ KWH$

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

3.8. The meter shall store the load profile in the meter memory, it shall consist of (energy, power readings, instantaneous measurement like voltage and current), And with the ability to choose the parameters listed in the O.B.I.S Code   which the meter should include in the load profile and configure the time interval for these readings (using the software).

3.9. The energy should be stored every 24 hours and the other data should be 30-minute interval with ability to change it or request it immediately by the software. And the meter also shall include all date about reactive energy in the load profile along with the power factor.

3.10. 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.

3.11. 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, the historical readings, the maximum demand, the load profile and any other needs. In addition, it shall continue to operate during power failure.   The meter shall support daylight saving according to Jordanian standard. In addition, it shall be possible to change date, time as well the tariff program.

3.12. The meter's register shall reset to Zero after reaching the maximum range 9999999.9 and all digits should always appear. In addition, not be permitted to reset to zero under any circumstances, before reaching the maximum range.

3.13. The meter LCD display shall have the facility to be read even if the power is not present.

3.14. A programmable auto cycle displays 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:
  - 1.8.0 Import active energy (A+) total [kWh]
- And for the push button is:

Number	OBIS code	Description
1	1.8.0	Import active energy (A+) total [kWh]

30

2	55.8.0	total neutral active energy
3	c.53.1	different active energy between phase and neutral
4	1.6.0	Positive active maximum demand (A+) total [kW]
5	31.7.0	Instantaneous current (I) in phase
6	32.7.0	Instantaneous voltage (U) in phase
7	0.9.1	Current time (hh:mm:ss)
8	0.9.2	Date (DD.MM.YY)
9	C.51.1	Event terminal cover opened - counter
10	C.51.2	Event terminal cover opened - timestamp
11	C.51.3	Event main cover opened - counter
12	13.7.0	Instantaneous power factor
13	3.8.0	Positive reactive energy (Q+) total [kvarh]

3.15. The meter shall indicate on the LCD direction of phase current (imports or export).

3.16. 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.

3.17. POWER QUALITY ANALYSIS:

3.17.1. Long and short outage detection with configurable time threshold.

3.17.2. Voltage sags and swells detection with configurable voltage and duration thresholds.

3.17.3. It is (preferred) that the meter has THD event detection with analysis up to 13th harmonic to reveal unusual conditions

3.18. the meter should have ability to show current threshold on the screen

3.19. 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.

4. Meter Hardware and Design:

4.1. A high contrast 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 not work if the meter is off-grid),

The display should be very clear (day and night) with not less than 8 digits excluding the hidden 4 decimals for testing, the digit dimension should not be less than 10mm 5 mm and all main digits should be continuous showing on the screen.

4.2. The battery shall be changeable easily (inside sealed cover), 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.

4.3. The meter shall be equipped with three LED:

4.3.1. Impulse LED for meter testing, and the meter constant shall be in from of impulse/ KWh. And this LED should have Enough distance from other pulsed LED to eliminate any effect on test operation

4.3.2. Alarm LED: the description is in point 7.4

4.3.3. Power and Relay LED: the description is in point 10.5.

(Alarm and power LED could be accepted with other suitable operation)

4.4. The active feedback pulse should only work with the phase energy not with neutral energy.

4.5. The meter shall have an ingress protection rating of IP54 in accordance with IEC 60529:1989

4.6. The terminal cover having rigid and homogeneous thickness without knock out grooves (weak areas) to prevent access to the feeding wires.

4.7. The cover of meters should be capable of being easily sealed with lead and two steel wire seals (the seals will be supplied and installed by IDECO as per our stander of 1.1mm diameter), , and the hole shall be with suitable size for using two wire seals easily.

4.8. Materials of the main cover of the meter shall be non-transparent white color and the terminal cover shall be clear transparent both covers must be 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. The quality of materials should be fully complying with the all tests according to IEC.

4.9. The meter cover and LCD shall not be affected by chemical materials used for cleaning purposes

4.10. The meters shall not generate waves or harmonics, which might affect the neighbouring electrical instruments or super imposed on power lines and shall not be affected by power failure that may prevent control of the meters.

4.11. 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.

4.12. The equipment in this specification should be capable of accepting any size of conductor in the range $6mm^2$ up to $16mm^2$ of stranded copper or Aluminum conductor PVC or XLPE insulated.

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

(Phase Supply: N supply: N load: Phase Load)

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

4.14. The terminal cover shall be re-enforced Polycarbonate or equivalent material, with minimum thickness 2.0 mm and the terminal cover shall be of extended type completely covering the terminal block and fixing holes.

4.15. The space inside the terminal cover should be sufficient to accommodate adequate length of external cables.

4.16. Terminal Block:

4.14.1 The width of the terminal block shall not exceed 130 mm and according to relative DIN standard.

4.14.2 The terminals should have insulating properties and mechanical strength.

4.14.3 The terminal block should be made from high conductivity material, flame retardant material (capable of passing the flammability tests) with nickel-plated brass or equivalent material for connecting terminals.

4.14.4 It should be rigidly fixed to the base of the meter so that it cannot be separated from the meter base without breaking either the meter base or the terminal (other suitable terminal installation could be accepted after test it in our lab) block and this fixing arrangement should be in parallel to the meter

base in such a way that it cannot be viewed or approached from any part of the meter without breaking the meter.
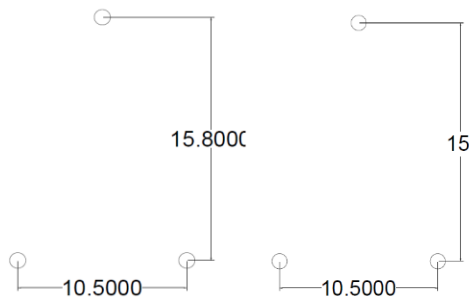
4.14.5 The terminal should withstand glow wire test at 960 ± 15 ºC and the terminal should withstand at least 135 ºC.

4.14.6 The terminal should be compatible with our test benches (ZERA , MT), and the screw position should be ready to test.

4.17. The screws shall not have pointed ends at the end of threads and shall be coated by (bimetallic) material of tinned / nickel plated brass or equivalent material to enable a good contact and prevent loosening at heat. And the vendor must provide a lab test certificate regarding the hardness of screw and terminal block.

4.18. The internal or plug and play modem and antennas should be fully covered.

4.19. The meter must fit the plastic panel that is used at IDECO and the mounting holes for the meter must be as the dimensions (centimeter) in the figures. other dimension will accepted if it fit to IDECO plastic installation panel and that need to be approved. If the offered meter doesn't support IDECO panel, the vendor has the right to bear the cost of rebuilding the mold of plastic panel which is around 12,000 USD.

15.8000   15

10.5000   10.5000

4.20. It has highly preferred that the meter components to be manufactured from the next reference list (the vendor must fill the table) if other manufacturer are offered all information and certificates related to should be attached to be evaluated.

Schedule No. (1).

Item No.	Description	Reference Manufacturer	Offered component manufacturer	Offered component place of manufacture	Offered component Name and model	Testing & Inspection and certificate information
1	SMT Resistance	TDK				
2	SMT Capacitor	YAGEO				
		UniOhm				
3	SMT Filter	Murata				
		Nippon Chemi-Con				
4	Electronics Capacitor	RUBYCON				
		ST Microelectronics				
		Microchip				
5	MCU	Maxim Microelectronics				
		Texas Instruments				
6	E2PROM	Microchip				
		ON Semiconductor				
7	FLASH ROM	JRC				
		KDS				
8	CPU	SEIKO				
		Atmel				
9	POWER REGULATOR	Renesas				
		Micron				
		FUJITSU				
10	CRYSTAL OSCILLATOR	Intel				
		Qualcomm				
		Infineon				
11	Memory	FUJITSU				
		Elpida				
		Rohm				
		TSMC				
		Samsung				
		Ericsson				
		Taiwan Semiconductor				
		SK Hynix				
		Toshiba				
12	RAM	TE CONNECTIVITY LTD				
		Tokyo Electron Ltd.				
		MediaTek				
		Asml				
		ASE				
		Infineon Technologies				

		Nxp				
13	BATTERY	The supplier should be a regular member At EUROBAT (SAFT is our preferred battery brand)				

4.21. To be completed by the Tenderer, the supplier of the next components will have apriority in the meter evaluation

Schedule No. (2)

Item No.	Description	Manufacturer	Place of Manufacturer	Testing & Inspection	Name and model
1.	Main board				
2.	Power Supply Board				
3.	LCD				
4.	Push Buttons				
5.	Communication Boards and internal modem				
6.	Terminals and screw				
7.	meter cover(Case)				
8.	terminal cover				
9.	Optical Communication port				
10.	Relay disconnector			Test must include life time	

11.	Current Sensors				

4.22. Did the meter have a type test using the same previous components and parts , please attach ?

4.23. The vendor should determine what type of measurements (for current sensor) the meter use, CT or shunt resistance or other technology:

	Measurements type	Supplier name
Phase		
Neutral		

4.24. The Tenderer must submit with his offer all the specifications, software manual, indicating ratings, weights, dimensions and time current characteristics of the offered materials.

4.25. 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.

5. Local Communications:

5.1. The meter shall include two ways IrDA optical communications port (According to IEC62056-21/IEC61107 Mode C).

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

6. Local data Transfer (preferred)

6.1. The meter should have two way local data transfer earthier with probe or with RF/ ID card or IR/probe

6.2. When attaches this tool to the meter the meter should transfer the pre-selected data to the tool and the tool should transfer the preprogramed data (if any) to the meter

6.3. The data transfer should be secured and related to the meter ID so the operator can determine the uploaded data and for which meter and read the data which downloaded from the metre

6.4. (10) of RF/ID or IR/Probe with related red and right devise should be offered in this tender

7. Meter PC software:

7.1. The meter's software shall be supplied with the meters with open license and security keys and programing 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.

7.2. The software module should be upgraded or modified upon to IDECO requests without extra charges while (IDECO) owns all software management properties. and the vendor should make any required necessary 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).

7.3. The software should have individual user accounts and it should communicate with the meters using IR

7.4. The software shall be submitted with deep <u>detailed</u> user manual along with the sample which should be submitted with the offer

7.5. The vendor shall provide IDECO with any needed support to program IDECO android devises to control the meter upon to IDECO request with the same modification condition in point 6.1. The meter shall be able to be capable to connected with IDECO android devises via optical probe (setting, upload, download, relay disconnect …etc.) high security data transfer is must and need to be approved, And the manufacturer must cooperate to achieve that .

7.6. The PC software is highly preferred to connect to the meters remotely, and the tenderer should supply all the required to run the software using IDECO servers to support all the supplied quantity of meters.

7.7. The meter firmware should be capable to upgrade remotely with all required security stages

7.8. The meter and PC software must have a log for all programming event containing the following data:

- Time and date
- User name
- Meter number
- Event type
- Programming details

8. Anti-tampering features

8.1. The meter shall be a high-level anti-tampering. This meter should detect and record events with time stamp for the following tampering cases:

  8.1.1. Main cover opening.

8.1.2. Terminal cover opening.

8.1.3. Modem cover opining

8.1.4. High magnetic field exposure.

8.1.5. Bypass. In any case where the current in the neutral is larger than the current in the phase.

8.1.6. Phase and Neutral reversed on incoming supply terminals

8.1.7. Neutral connection removed

8.1.8. (energy recording in such cases should be fully explained from the tenderer and approved by IDECO)

8.2. In addition to mentioned alarm flags the meter should have Alarm LED and it should be programmable in which event it should be on, IDECO shall approve this operation

8.3. The meter should not be influenced by external strong magnetic fields or electrostatic DC discharge (up to 100 kV) for 1 minute.

8.4. The meter should have the energy Hiding feature as the following: when the meter have Main Cover Open Event a timer will starts for 300 hour, (timer is preferred to be programmable using software). Therefore, at the end of this timer the meter will change the display on the screen to be Current time (hh:mm:ss) OBIS 0.9.1 instead of 15.8.0

In addition, the timer can be reset and disabled using PC software.

8.5. the meter shall be provided with two measuring element one on phase and the other on neutral, and the meter shall measure the (phase energy) and display this energy in the main register for billing purposes, the meter shall measure the (neutral energy) and store it on a separate register, and display this energy on the LCD under OBIS-code 55.8.0. In addition, the meter shall calculate the difference between the phase energy and neutral energy when the neutral energy is higher and display this difference under OBIS-code C.53.1

9. **Electrical features and certifications:**

9.1. Type test Certificate should be shown for the same meter accepted lab which shown in 9.11 and The tenderer should fill the next table

Schedule No. (3).

Test name	Test lab	Test date	Test result
Tests of the mechanical properties			
Tests of climatic influences			
Accuracy measurement at different loads			

Effect of change of influence quantities on accuracy			
Effect of short-time overcurrent on the accuracy			
Self-heating			
Power consumption of the voltage and current circuits			
Fast transient burst test			
Electrostatic discharges			
Immunity to electromagnetic RF fields			
Immunity to conducted disturbances induced by RF fields			
Interference measurement			
Voltage dips and short interruptions			
Surge immunity test			
Insulation			
Battery life time			
Relay life time			
LCD life time			
Meter life time			
E-sim			

9.2. 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.

9.3. 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.

9.4. The Tenderer shall also submit evidence that the meters can operate approximately 20 years and remain within limits of error of ± 1% during that time. This has to be confirmed by an official certificate/letter from an Official Institute like OFGEM/GB, SGS or similar international organization.

9.5. The tenderer/manufacturer of the meters offered shall supply proof that his meter is used on third party (MDM or HES) and a latter from the customer should be present in the offer.

9.6. The tenderer/manufacturer of the meters offered is preferred to supply proof that his meter is used on third party Headend and a latter from the customer should be present in the offer

9.7. The relay should be tested in respect of the following standard IEC Requirements for UC. Also, it is a must for the tendered to submit type test certificates of relay.

9.8. However, according to the local rules it must be possible to do regular checking / testing at site with on-site test equipment.

9.9. Any presented certificates or approval .etc., requested in this tender must be for the same and exact offered meter without any deviation and it should be Issued by an accredited body from ILACE (is the international organisation for accreditation bodies)

9.10. The matters should be

9.11. The lifetime of the offered meter has to be (20 years with 5% max tolerance) which has to be confirmed by lifetime third party certificate. During the meter lifetime it doesn't require any calibration or maintenance, stability of meter accuracy should be guaranteed

9.12. The tenderer should fill the next table:

No.	component	Presented/Not Presented
1	Type Test Of Energy Meters	
2	Certificate Of Predicted Lifetime For Meter& LCD (20 years)	

3	Proof Of life time For Battery (15 years)	
4	Test For Relay	
5	DLMS Certification, certification must be provided.	

ALL Certificates must be confirmed by third party lab.

10.   Meter test (FAT):

10.1. 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 IDECO.

10.2. 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 IDECO's Test Station in Irbid without losing their calibration.

10.3. Power Losses: The losses in each voltage and current circuit shall be measured under reference condition to prove compliance with IEC Standards.

10.4. Heating and Dielectric Tests: Tests shall be carried out to establish compliance with the requirements of IEC Standards. 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 lieu of type testing.

10.5. Insulation Test.

10.6. The meters shall be tested at pressure of 4kV for a period of 1 minute between all live terminals and earth.

10.7. Any other type or routine test can be requested by IDECO to do it in the factory or/and to get certification from previous mentioned labs.

10.8. The inspection of meters in the factory must be done according to the inspection sheet attached to the tender document.

11. Disconnect and Connect Relay.

11.1. The required meters shall be provided with internal disconnect or (Relay) to be used for both remote and local connection/disconnection in addition to limit and control load current of the customer.

11.2. The relay should be:

11.2.1. All threshold, parameters and setting should be programmable, locally and remotely.

11.2.2. Software should be able to locally and remotely enable or disable the relay function, the disabling is important for accuracy test when the meter will be tested with the maximum current.

11.2.3. All modes should control the meter without any needed permeation from the meter like connecting button

11.3. The relay should work on three modes:

11.3.1. **The Automatic Mode** for voltage and current limiting function to disconnect in overload or over voltage situation:

11.3.1.1. **Over current**: when the current reach the set value i1 for a period to be set T1 for overload, relay should disconnect and connect a gain automatically after T2 and repeat the operation if needed, all of this parameters should be changeable and programmable by the pc software and at least two current value and time threshold should be programed for the overload, the default thresholds values should be:

1. First threshold $40 \leq i1 < 50$ A for continuous 7 (T1) minutes, and it reconnect after 5 (T2) minutes.

2. Second threshold $I \geq 50$ A, for 1 second, And it reconnects after 5 minutes.

11.3.1.2. **Over Voltage**: the voltage should have V1 for under voltage and V2 for over voltage and it should disconnect instantaneously if the voltage increase more than V2 or decrease from V1. The default thresholds values should be:

11.3.1.2.1. Voltage $\leq$ 165 V disconnect immediately, and reconnect after 5 minutes if the condition release.

11.3.1.2.2. Voltage $\geq$ 265 V disconnect immediately, and reconnect after 5 minutes if the condition release.

11.3.2. **Manual mode,** this mode to be connecting/disconnecting by the utility using all of the following : remote control and locally using PC software or hand held units HHU (to connect, disconnect after specific time) or MDM (all of previous method should control the meter without any needed permeation from the meter like connecting button), the manual disconnection should be

programmable to take place after a given time from the manual disconnect command i.e. after 1, 5, 15, 30, 40… minutes up to 72 hours, The default thresholds values should be 1 minute for disconnection and the connecting order should act immediately.

11.3.3. **The Energy Mode** this mode to be disconnect the relay depend on energy consumption which will be set in KWH this feature should be default disabled and could be enabled and programed remotely and locally with value range 0-xxxxxkwh (we will use that as a type of prepaid meter)

11.3.4. **Lightning Mode:** (Normally deactivated) Smart street light management system whenever this mode is activated; the relay operation will follow a given table containing sunrise and sunset time for the whole year so the relay will connect the relay at sunset and disconnect at sunrise depend on meter location or other computable method without lifting sensor.

- Activation of lighting mode shouldn't cancel any other mode

11.4. Meter should have clear way to show the relay status and the disconnection type using led to show overload or manual disconnection and to have clear screen massage.

11.5. LED operation for relay is highly preferred should be:
- Over load Disconnection: Red Flashing
- Manual Disconnection: Green
- Meter Powered and Relay Connected: Red

11.6. The meter shall store all events related to the relay operation with specifying the source of the order, (over current, local order, remote order) with the values

11.7. IDECO should approve the relay behavior for all mentioned and not mentioned cases.

11.8. All of the above values (currents and timers) must be adjustable using PC software.

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

12.1.   IDECO logo
12.2.   Meter Type
12.3.   Manufacturer and year of manufacturing
12.4.   Voltage, phase(s), wire(s).
12.5.   Meter Current
12.6.   Frequency
12.7.   Accuracy class
12.8.   Number of pulses per KWH.
12.9.   The words "Property Of Irbid District Electricity Co. LTD"
12.10.   Each supplied meter shall have a serial number (supplied by IDECO) as our stander for numbering printed in numbers (10 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.

12.11.   The plate shall carry also the contract no. (IDECO-63/2022), stock code as seen on page X and the year of manufacturing,

12.12.   All packing cartoons and wooden boxes shall carry IDECO contract No. 63/2022
12.13.   Flags numbers for tampering indication as in section 7 (to be approved by IDECO).
12.14.   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.

13. E-sim Modem:

13.1. The metre /modem must be able to send Last Gasp message in the case when meter loss of power and turn-off, the modem must send a message to the Head-End system specifying that the meter is now offline due to loss of power. And when the power is back, the modem must send a message to the Head-End system specifying that the meter has restored the power.

13.2. The meter /modem should have capability to push pre-selected event to the Headend system immediately after it registered in the meter, this feature should have program to control it regarding to the required event, queue control …. Etc.

13.3. The Cellular modem should be 4G/3G with automatic switch depend on signal strength

13.4. The E-sim modem is highly preferred to have capability to work with any telecommunication operator in Jordan after the end of contract and that should be proved and guaranteed.

13.5. E-Sim card should use close group and it shouldn't communicate with any device out of this group

13.6. The E-SIM card shouldn't be activated before installation and it will be activated upon to our request and the modem should go life for 14 years from first data transfer

13.7. Meter name plate should show the E-SIM number or serial number or any needed information to track or activate it in form of 128 C barcode.

13.8. The supplier should supply communication with all required confirmations from Jordanian Telecommunication Company and with suitable data amount which should be describe in the offer, with the full support by the vendor during this time, this should be complete solution which should be included in the offer.

13.9. The solution should guarantee more than 98% online at any time and 100% as historical collected data otherwise IDECO have the right to apply penalty and didn't pay any payment for non-connected meter if it offline more than 2 months

13.10. IDECO could install the meters in different locations and areas without committing to a specific quantity in the area.

13.11. The Cellular operator and the supplier must have no access to the system without IDECO Permission

13.12. Sim card live information manager must be provided with the solution.

13.13. The meter shall be able to display signal strength on LCD as a number in the button display list and must be readable using PC software and AMI.

13.14. The e-Sim IMEI or MAC address number must be readable via PC software and AMI.

13.15. The modem must have a normal SIM slot as backup and the user can select via PC software between E-SIM and normal Sim.

14. Sample meters and its Software:

14.1. Non-returnable two Samples meters <u>identical to the offered designs</u> must be hand-carried and submitted with the Tender with maximum 15 days from tender closing date with a presentation at IDECO office.

14.2. These representative samples will be closely examined and will undergo mechanical, electrical and accuracy tests at the IDECO Test Station in Irbid. <u>Failure of the samples to meet the mechanical and electrical Specifications set out in this Document will entitle IDECO to reject the Tender. And this sample must comply with all tender requirements</u>.

14.3. These samples shall be programmed to meet the previous IDECO Tariff scheme and features.

14.4. Full programming software with manual should be submitted with the offer.

14.5. IDECO will go through the configurations of the meter sample and make the proper   modification, so the tender/manufacturer will configure all of the meters to meet the needs of IDECO.

14.6. Any other related mentioned point in the tender shall be in the presentation.

15. 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.

15.1. The meters should be guaranteed against any manufacturing defects before and after installation for 14 years, in the event that a manufacturing defect is found in a meter before installation, a free replacement meter should be supplied and delivered to IDECO warehouses without bearing any costs on IDECO.
In the event that the meter fails after installation, 25% of meter price will be charged on the supplier as replacement fees, (defective meters will be counted at the end of each year and the delivery period for replacement meter will be as per tender requirement.

15.2. Full online free software training for (2) IDECO engineers.

15.3. Each shipment required based on (request for delivery) shall be inspected in country of origin by IDECO engineers, and all Inspection Costs (Visa, Air Tickets, good Hotel, Accommodation, Transportation, etc.) should be mentioned in the tender per engineer per visit so it shouldn't be included with the offer price. And it should include the trip plane with time schedule

15.4. The vendor is highly preferred to have supplied at least 100000 meter of the same type for Middle East or Europe.

15.5. The meter should have the following sticker with size of 8 cmx3cm on the both side of the meter (in the main cover) 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 the main cover removed for one-time so the sticker will be rejected if the meter could be open (in any way) without crack the sticker. (Refer to IDECO for a softcopy of the seal).

تنبيه عام

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

15.6. The tenderer should supply 15 optical probe and 15 USB key (if needed) with the tender

15.7. IDECO engineer should approve the meter programing and configurations before shipping

15.8. 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.

15.9. The tenderer must attached PDF (text) softcopy (not scanned) for the technical offer.

15.10. The vendor should provide the following information in the offer for the meter :

15.10.1. Full meter communication protocols.
15.10.2. TCP/IP login connectionism.
15.10.3. Data encryption method.
15.10.4. Data Model.
15.10.5. Integration environment.

15.11. The vendor should provide the following information in the offer for the modem :
15.11.1. Power and Power control
1- Power Supply Voltage (What is the average/min/max of output voltage)
2- Load Regulation (What is the max voltage drop under maximum load current)
3- Rated/Max Current (What is the max permissible current)
4- Power Control (Does the Meter controls the Modem Power)

• Interface
1- Interface type (UART or SPI)
2-TTL level 3.3 or 5v
3-Isolated or non-isolated

15.11.2. Protocol

1What is the messaging protocol

2-Does it support setting and reading of all meter parameters or limited to a set of parameters

3-Secured or Opened

15.11.3. Data Model

1-What is the meter data model (DLMS/1107 or other)

15.12. The material safety data sheet (MSDS) of all equipment / materials is required to be submitted with the offer.

15.13. IDECO has the complete right to reply on contractor's clarifications during 7 days, and during this period there is not exemption from incurred penalty for the event.

15.14. After Awarding Tenders, winner tenderer will be assessment according to quality of good, delivery period, service after sale, and assessment weight will be considered in coming tenders' evaluation.

15.15. Euro one certificate shall be submitted during clearance process, in case the country of origin of the required materials from Europe countries.

15.16. Defective materials under guarantee period shall be return to IDECO STORES during six months from exiting material from IDECO stores.

15.17. The manufacturer shall print 128 c bar code in each item as below shape, and bar code character will be submitted to manufacturer at awarding date.

Technical particulars for single phase meter (To be completed by the Tenderer)

<u>SCHEDULE 4</u>

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 availability in load profile		
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	Total power consumption	VA	

20	Power consumption in voltage circuit	VA	
21	Power consumption in current circuit	VA	
22	Power consumption in modem circuit	VA	
23	Meter constant	Imp per kWh	
24	Meter dimensions		
25	Material of terminal block connectors		
26	Meter weight	Grams	
27	Degree of Protection		
28	Is the meter equipped with phase failure Indicator on LCD?		
29	Is the meter equipped with Reverse run Indicator on LCD?		
30	Is the meter equipped with phase rotation Indicator on LCD?		
31	Is the meter equipped with energy direction status Indicator on LCD?		
32	Is the meter equipped with Communication Indicator on LCD?		
33	Is the meter equipped with low battery Indicator on LCD?		
34	Is the meter equipped with terminal cover removing record indicator on LCD?		
35	Is the meter equipped with bypass indicator on LCD?		
36	Could the meter be extended for repayment?		
37	What is the IP of the meter?		
38	Software Features		
39	Is the software upgrade free of extra charge		
40	All software features shall be provided in tender offer and in the following rows		

(Item 2): Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with Ethernet modem.

> *Dear tenderer it will be considered that you accept and agree all requirements unless you show comments and deviations of the requirements in your offer*

Reference Standard: International Standard specifications IEC 62052/53, IEC62059, 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 have considered a deviation.

1. Climate Conditions:

The following is applicable unless otherwise is mentioned in our tender:

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 30m/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 meter shall be of Class 1 for indoor and outdoor domestic applications with:

2.1. Rated current of 10-80 A

2.2. Rated Voltage of 230 V ± 20%

2.3. Frequency 50 Hz

2.4. Relay rated current (min.80 A)

2.5. Active Energy Class 1.

2.6. Electromagnetic Compatibility of 15kV according to IEC61000-4-2

2.7. Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC61000-4-3

2.8. Fast Transient Burst 4 kV for main circuits, 2 kV for auxiliary circuits, to IEC61000-4-5

2.9. Insulation strength of 4kVAC at 50Hz for 1 minute

2.10. Insulation strength Pulse Voltage 1.2/50microsec, 8kV main circuits, 6 kV auxiliary circuits according to IEC 62052-11

2.11. Impulse withstands voltage of (8kV)
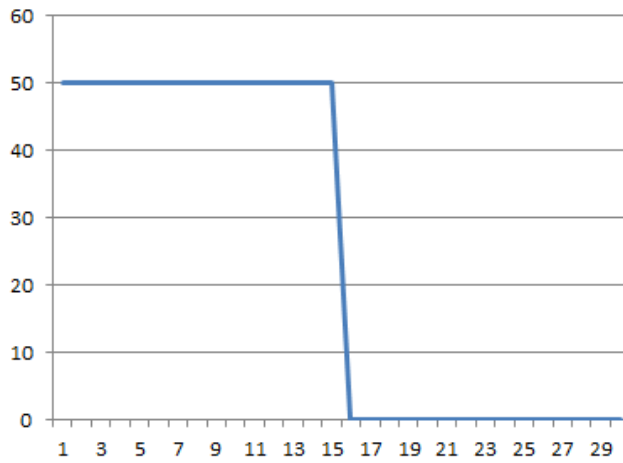
3. Meter tariff, billing and display:

3.1. Active energy (import, export), as IEC 62053-22, IEC 62053-21, class 1

3.2. Reactive energy (4 quadrants and combined quadrants), IEC 62053-23, class 2.

3.3. Current average, maximum and cumulative demand measurement

3.4. Instantaneous and historical measurements of V, I, PF, phase angles, demands, frequency…etc.

3.5. The meter shall measure the import active energy with daily rates (up to four rates) as well as for export active energy. In addition, IDECO shall have ability to easily configure these four rates at the desired times of day.

3.6. The meter shall be able to provide historical data, (billing periods for not less than 12 months). The meter shall be programmable to show the historical data registers on LCD(not less than 2 months), beside the possibility to read them through optical probe or remotely.

3.7. Tenders 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:

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

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 $= 50\ KW \times 0.25\ H\ = 12.5\ KWH$

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

3.8. The meter shall store the load profile in the meter memory, it shall consist of (energy, power readings, instantaneous measurement like voltage and current), And with the ability to choose the parameters listed in the O.B.I.S Code which the meter should include in the load profile and configure the time interval for these readings (using the software).

3.9. The energy should be stored every 24 hours and the other data should be 30-minute interval with ability to change it or request it immediately by the software. And the meter also shall include all date about reactive energy in the load profile along with the power factor.

3.10. 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.

3.11. 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, the historical readings, the maximum demand, the load profile and any other needs. In addition, it shall continue to operate during power failure. The meter shall support daylight saving according to Jordanian standard. In addition, it shall be possible to change date, time as well the tariff program.

3.12. The meter's register shall reset to Zero after reaching the maximum range 9999999.9 and all digits should always appear. In addition, not be permitted to reset to zero under any circumstances, before reaching the maximum range.

3.13. The meter LCD display shall have the facility to be read even if the power is not present.

3.14. A programmable auto cycle displays 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:
  - 1.8.0 Import active energy (A+) total [kWh]
- And for the push button is:

Number	OBIS code	Description
1	1.8.0	Import active energy (A+) total [kWh]
2	55.8.0	total neutral active energy
3	c.53.1	different active energy between phase and neutral
4	1.6.0	Positive active maximum demand (A+) total [kW]
5	31.7.0	Instantaneous current (I) in phase
6	32.7.0	Instantaneous voltage (U) in phase
7	0.9.1	Current time (hh:mm:ss)
8	0.9.2	Date (DD.MM.YY)
9	C.51.1	Event terminal cover opened - counter
10	C.51.2	Event terminal cover opened - timestamp
11	C.51.3	Event main cover opened - counter
12	13.7.0	Instantaneous power factor
13	3.8.0	Positive reactive energy (Q+) total [kvarh]

3.15. The meter shall indicate on the LCD direction of phase current (imports or export).

3.16. 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.

3.17. POWER QUALITY ANALYSIS:
   3.17.1. Long and short outage detection with configurable time threshold.
   3.17.2. Voltage sags and swells detection with configurable voltage and duration thresholds.
   3.17.3. It is (preferred) that the meter has THD event detection with analysis up to 13th harmonic to reveal unusual conditions
3.18. the meter should have ability to show current threshold on the screen
3.19. 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.

4. Meter Hardware and Design:

4.1. A high contrast 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 not work if the meter is off-grid),

The display should be very clear (day and night) with not less than 8 digits excluding the hidden 4 decimals for testing, the digit dimension should not be less than 10mm 5 mm and all main digits should be continuous showing on the screen.

4.2. The battery shall be changeable easily (inside sealed cover), 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.

4.3. The meter shall be equipped with three LED:

4.3.1. Impulse LED for meter testing, and the meter constant shall be in from of impulse/ KWh. And this LED should have Enough distance from other pulsed LED to eliminate any effect on test operation

4.3.2. Alarm LED: the description is in point 7.4

4.3.3. Power and Relay LED: the description is in point 10.5.
(Alarm and power LED could be accepted with other suitable operation)

4.4. The active feedback pulse should only work with the phase energy not with neutral energy.

4.5. The meter shall have an ingress protection rating of IP54 in accordance with IEC 60529:1989

4.6. The terminal cover having rigid and homogeneous thickness without knock out grooves (weak areas) to prevent access to the feeding wires.

4.7. The cover of meters should be capable of being easily sealed with lead and two steel wire seals (the seals will be supplied and installed by IDECO as per our stander of 1.1mm diameter), , and the hole shall be with suitable size for using two wire seals easily.

4.8. Materials of the main cover of the meter shall be non-transparent white color and the terminal cover shall be clear transparent both covers must be 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. The quality of materials should be fully complying with the all tests according to IEC.

4.9. The meter cover and LCD shall not be affected by chemical materials used for cleaning purposes

4.10. The meters shall not generate waves or harmonics, which might affect the neighbouring electrical instruments or super imposed on power lines and shall not be affected by power failure that may prevent control of the meters.

4.11. 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.

4.12. The equipment in this specification should be capable of accepting any size of conductor in the range $6mm^2$ up to $16mm^2$ of stranded copper or Aluminum conductor PVC or XLPE insulated.

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

(Phase Supply: N supply: N load: Phase Load)

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

4.14. The terminal cover shall be re-enforced Polycarbonate or equivalent material, with minimum thickness 2.0 mm and the terminal cover shall be of extended type completely covering the terminal block and fixing holes.

4.15. The space inside the terminal cover should be sufficient to accommodate adequate length of external cables.

4.16. Terminal Block:

   4.14.7 The width of the terminal block shall not exceed 130 mm and according to relative DIN standard.
   4.14.8 The terminals should have insulating properties and mechanical strength.
   4.14.9 The terminal block should be made from high conductivity material, flame retardant material (capable of passing the flammability tests) with nickel-plated brass or equivalent material for connecting terminals.
   4.14.10   It should be rigidly fixed to the base of the meter so that it cannot be separated from the meter base without breaking either the meter base or the terminal (other suitable terminal installation could be accepted after test it in our lab) block and this fixing arrangement should be in parallel to the meter base in such a way that it cannot be viewed or approached from any part of the meter without breaking the meter.
   4.14.11   The terminal should withstand glow wire test at 960 ± 15 ℃ and the terminal should withstand at least 135 ℃.
   4.14.12   The terminal should be compatible with our test benches (ZERA , MT), and the screw position should be ready to test.

4.17. The screws shall not have pointed ends at the end of threads and shall be coated by (bimetallic) material of tinned / nickel plated brass or equivalent material to enable a good contact and prevent loosening at heat. And the vendor must provide a lab test certificate regarding the hardness of screw and terminal block.

4.18. The internal or plug and play modem and antennas should be fully covered.
4.19. The meter must fit the plastic panel that is used at IDECO and the mounting holes for the meter must be as the dimensions (centimeter) in the figures. other dimension will accepted if it fit to IDECO plastic installation panel and that need to be approved. If the offered meter doesn't support IDECO panel, the vendor has the right to bear the cost of rebuilding the mold of plastic panel which is around 12,000 USD.

15.8000   15

10.5000   10.5000

4.20. Its highly preferred that the meter components to be manufactured from the next reference list (the vendor must fill the table) if other manufacturer are offered all information and certificates related to should be attached to be evaluated.

Schedule No. (5).

Item No.	Description	Reference Manufacturer	Offered component manufacturer	Offered component place of manufacture	Offered component Name and model	Testing & Inspection and certificate information
1	SMT Resistance					
2	SMT Capacitor	TDK				
		YAGEO				
3	SMT Filter	UniOhm				
		Murata				
4	Electronics Capacitor	Nippon Chemi-Con				
		RUBYCON				
		ST Microelectronics				
5	MCU	Microchip				
		Maxim Microelectronics				
6	E2PROM	Texas Instruments				
		Microchip				
7	FLASH ROM	ON Semiconductor				
		JRC				
8	CPU	KDS				
		SEIKO				
9	POWER REGULATOR	Atmel				
		Renesas				
		Micron				
10	CRYSTAL OSCILLATOR	FUJITSU				
		Intel				
		Qualcomm				
11	Memory	Infineon				
		FUJITSU				
		Elpida				

		Rohm				
		TSMC				
		Samsung				
		Ericsson				
		Taiwan Semiconductor				
		SK Hynix				
12	RAM	Toshiba				
		TE CONNECTIVITY LTD				
		Tokyo Electron Ltd.				
		MediaTek				
		Asml				
		ASE				
		Infineon Technologies				
		Nxp				
13	BATTERY	The supplier should be a regular member At EUROBAT (SAFT is our preferred battery brand)				

4.21. To be completed by the Tenderer, the supplier of the next components will have apriority in the meter evaluation

Schedule No. (6)

Item No.	Description	Manufacturer	Place of Manufacturer	Testing & Inspection	Name and model
12.	Main board				
13.	Power Supply Board				
14.	LCD				
15.	Push Buttons				
16.	Communication Boards and internal modem				
17.	Terminals and screw				
18.	meter cover(Case)				
19.	terminal cover				

				Test must include life time	
20.	Optical Communication port				
21.	Relay disconnector			Test must include life time	
22.	Current Sensors				

4.22. Did the meter have a type test using the same previous components and parts , please attach ?

4.23. The vendor should determine what type of measurements (for current sensor) the meter use, CT or shunt resistance or other technology:

	Measurements type	Supplier name
Phase		
Neutral		

4.24. The Tenderer must submit with his offer all the specifications, software manual, indicating ratings, weights, dimensions and time current characteristics of the offered materials.

4.25. 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.

5. Local Communications:

5.1. The meter shall include two ways IrDA optical communications port (According to IEC62056-21/IEC61107 Mode C).

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

6. Local data Transfer (preferred)

6.1. The meter should have two way local data transfer earthier with probe or with RF/ ID card or IR/probe

6.2. When attaches this tool to the meter the meter should transfer the pre-selected data to the tool and the tool should transfer the preprogramed data (if any) to the meter

6.3. The data transfer should be secured and related to the meter ID so the operator can determine the uploaded data and for which meter and read the data which downloaded from the metre

6.4. (10) of RF/ID or IR/Probe with related red and right devise should be offered in this tender

7. Meter PC software:

7.1. The meter's software shall be supplied with the meters with open license and security keys and programing 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.

7.2. The software module should be upgraded or modified upon to IDECO requests without extra charges while (IDECO) owns all software management properties. and the vendor should make any required necessary 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).

7.3. The software should have individual user accounts and it should communicate with the meters using IR

7.4. The software shall be submitted with deep <u>detailed</u> user manual along with the sample which should be submitted with the offer

7.5. The vendor shall provide IDECO with any needed support to program IDECO android devises to control the meter upon to IDECO request with the same modification condition in point 6.1. The meter shall be able to be capable to connected with IDECO android devises via optical probe (setting, upload, download, relay disconnect …etc.) high security data transfer is must and need to be approved, And the manufacturer must cooperate to achieve that.

7.6. The PC software is highly preferred to connect to the meters remotely, and the tenderer should supply all the required to run the software using IDECO servers to support all the supplied quantity of meters.

7.7. The meter firmware should be capable to upgrade remotely with all required security stages

7.8. The meter and PC software must have a log for all programming event containing the following data:

- Time and date
- User name
- Meter number
- Event type
- Programming details

8. Anti-tampering features

8.1. 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:

    8.1.1. Main cover opening.

8.1.2.   Terminal cover opening.

8.1.3.   Modem cover opining

8.1.4.   High magnetic field exposure.

8.1.5.   Bypass. In any case where the current in the neutral is larger than the current in the phase.

8.1.6.   Phase and Neutral reversed on incoming supply terminals

8.1.7.   Neutral connection removed

8.2.   In addition to mentioned alarm flags the meter should have Alarm LED and it should be programmable in which event it should be on, IDECO shall approve this operation

8.3.   The meter should not be influenced by external strong magnetic fields or electrostatic DC discharge (up to 100 kV) for 1 minute.

8.4.   The meter should have the energy Hiding feature as the following: when the meter have Main Cover Open Event a timer will starts for 300 hour, (timer is preferred to be programmable using software). Therefore, at the end of this timer the meter will change the display on the screen to be Current time (hh:mm:ss) OBIS 0.9.1 instead of 15.8.0

In addition, the timer can be reset and disabled using PC software.

8.5.   the meter shall be provided with two measuring element one on phase and the other on neutral, and the meter shall measure the (phase energy) and display this energy in the main register for billing purposes, the meter shall measure the (neutral energy) and store it on a separate register, and display this energy on the LCD under OBIS-code 55.8.0. In addition, the meter shall calculate the difference between the phase energy and neutral energy when the neutral energy is higher and display this difference under OBIS-code C.53.1

9. **Electrical features and certifications:**

9.1.   Type test Certificate should be shown for the same meter accepted lab which shown in 9.11 and The tenderer should fill the next table

Schedule No. (7).

Test name	Test lab	Test date	Test result
Tests of the mechanical properties			
Tests of climatic influences			
Accuracy measurement at different loads			
Effect of change of influence quantities on accuracy			

Effect of short-time overcurrent on the accuracy			
Self-heating			
Power consumption of the voltage and current circuits			
Fast transient burst test			
Electrostatic discharges			
Immunity to electromagnetic RF fields			
Immunity to conducted disturbances induced by RF fields			
Interference measurement			
Voltage dips and short interruptions			
Surge immunity test			
Insulation			
Battery life time			
Relay life time			
LCD life time			
Meter life time			
E-sim			

9.2. 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.

9.3. 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.

9.4. The Tenderer shall also submit evidence that the meters can operate approximately 20 years and remain within limits of error of ± 1% during that time. This has to be confirmed by an official certificate/letter from an Official Institute like OFGEM/GB, SGS or similar international organization.

9.5. The tenderer/manufacturer of the meters offered shall supply proof that his meter is used on third party (MDM or HES) and a latter from the customer should be present in the offer.

9.6. The tenderer/manufacturer of the meters offered is preferred to supply proof that his meter is used on third party Headend and a latter from the customer should be present in the offer

9.7. The relay should be tested in respect of the following standard IEC Requirements for UC. Also, it is a must for the tendered to submit type test certificates of relay.

9.8. However, according to the local rules it must be possible to do regular checking / testing at site with on-site test equipment.

9.9. Any presented certificates or approval .etc., requested in this tender must be for the same and exact offered meter without any deviation and it should be Issued by an accredited body from ILACE (is the international organisation for accreditation bodies)

9.10. The lifetime of the offered meter has to be (20 years with 5% max tolerance) which has to be confirmed by lifetime third party certificate. During the meter lifetime it doesn't require any calibration or maintenance, stability of meter accuracy should be guaranteed

9.11. The tenderer should fill the next table:

No.	component	Presented/Not Presented
1	Type Test Of Energy Meters	
2	Certificate Of Predicted Lifetime For Meter& LCD (20 years)	
3	Proof Of life time For Battery (15 years)	
4	Test For Relay	
5	DLMS Certification, certification must be provided.	

ALL Certificates must be confirmed by third party lab.

10.   Meter test (FAT):

10.1. 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 IDECO.

10.2. 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 IDECO's Test Station in Irbid without losing their calibration.

10.3. Power Losses: The losses in each voltage and current circuit shall be measured under reference condition to prove compliance with IEC Standards.

10.4. Heating and Dielectric Tests: Tests shall be carried out to establish compliance with the requirements of IEC Standards. 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 lieu of type testing.

10.5. Insulation Test.

10.6. The meters shall be tested at pressure of 4kV for a period of 1 minute between all live terminals and earth.

10.7. Any other type or routine test can be requested by IDECO to do it in the factory or/and to get certification from previous mentioned labs.

11. Disconnect and Connect Relay.

11.1.   The required meters shall be provided with internal disconnect or (Relay) to be used for both remote and local connection/disconnection in addition to limit and control load current of the customer.

11.2. The relay should be:

11.2.1. All threshold, parameters and setting should be programmable, locally and remotely.
11.2.2. Software should be able to locally and remotely enable or disable the relay function, the disabling is important for accuracy test when the meter will be tested with the maximum current.
11.2.3. All modes should control the meter without any needed permeation from the meter like connecting button

11.3. The relay should work on three modes:

11.3.1. **The Automatic Mode** for voltage and current limiting function to disconnect in overload or over voltage situation:

11.3.1.1. **Over current**: when the current reach the set value i1 for a period to be set T1 for overload, relay should disconnect and connect a gain automatically after T2 and repeat the operation if needed, all of this parameters should be changeable and programmable by the pc software and at least two current value and time threshold should be programed for the overload, the default thresholds values should be:

3. First threshold $40 \leq i1 < 50$ A for continuous 7 (T1) minutes, and it reconnect after 5 (T2) minutes.

4. Second threshold $I \geq 50$ A, for 1 second, And it reconnects after 5 minutes.

11.3.1.2. **Over Voltage**: the voltage should have V1 for under voltage and V2 for over voltage and it should disconnect instantaneously if the voltage increase more than V2 or decrease from V1. The default thresholds values should be:

11.3.1.2.1. Voltage ≤ 165 V disconnect immediately, and reconnect after 5 minutes if the condition release.
11.3.1.2.2. Voltage ≥ 265 V disconnect immediately, and reconnect after 5 minutes if the condition release.

11.3.2. **Manual mode,** this mode to be connecting/disconnecting by the utility using all of the following : remote control and locally using PC software or hand held units HHU (to connect, disconnect after specific time) or MDM (all of previous method should control the meter without any needed permeation from the meter like connecting button), the manual disconnection should be programmable to take place after a given time from the manual disconnect command i.e. after 1, 5, 15, 30, 40… minutes up to 72 hours, The default thresholds values should be 1 minute for disconnection and the connecting order should act immediately.

11.3.3. **The Energy Mode** this mode to be disconnect the relay depend on energy consumption which will be set in KWH this feature should be default disabled and could be enabled and programed remotely and locally with value range 0-xxxxxkwh (we will use that as a type of prepaid meter)

11.3.4 **Lightning Mode:** (Normally deactivated) Smart street light management system whenever this mode is activated; the relay operation will follow a given table containing sunrise and sunset time for the whole year so the relay will connect the relay at sunset and disconnect at sunrise depend on meter location or other computable method without lifting sensor.

- Activation of lighting mode shouldn't cancel any other mode

11.4. Meter should have clear way to show the relay status and the disconnection type using led to show overload or manual disconnection and to have clear screen massage.

11.5. LED operation for relay is highly preferred should be:
- Over load Disconnection: Red Flashing
- Manual Disconnection: Green
- Meter Powered and Relay Connected: Red

11.6. <u>The meter shall store all events related to the relay operation with specifying the source of the order, (over current, local order, remote order) with the values</u>

11.7. <u>IDECO should approve the relay behavior for all mentioned and not mentioned cases.</u>

11.8. All of the above values (currents and timers) must be adjustable using PC software.

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

12.1. IDECO logo
12.2. Meter Type
12.3. Manufacturer and year of manufacturing
12.4. Voltage, phase(s), wire(s).
12.5. Meter Current
12.6. Frequency
12.7. Accuracy class
12.8. Number of pulses per KWH.
12.9. The words "Property Of Irbid District Electricity Co. LTD"
12.10. Each supplied meter shall have a serial number (supplied by IDECO) as our stander for numbering printed in numbers (10 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.
12.11. The plate shall carry also the contract no. (IDECO-63/2022), stock code as seen on page X and the year of manufacturing,
12.12. Defective materials under guarantee period shall be return to IDECO STORES during six months from exiting material from IDECO stores.
12.13. All packing cartoons and wooden boxes shall carry IDECO contract No. 63/2022.
12.14. Flags numbers for tampering indication as in section 7 (to be approved by IDECO).
12.15. 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.

13. Ethernet Modem:

13.1. The meter must support plug and play modems with different types of communications modems which is E-Sim, Ethernet, Fiber, PLC , LooRa and RF.

13.2. The metre /modem must be able to send Last Gasp message in the case when meter loss of power and turn-off, the modem must send a message to the Head-End system specifying that the meter is now offline due to loss of power. And when the power is back, the modem must send a message to the Head-End system specifying that the meter has restored the power.

13.3. The meter /modem should have capability to push pre-selected event to the Headend system immediately after it registered in the meter, this feature should have program to control it regarding to the required event, queue control …. Etc.

13.4. Programmable Fixed IP or Dynamic IP Assignment

13.5. Device is Immediately Detected on the Network

13.6. Industry Standard 10BaseT Ethernet Interface with standard RJ-45 Connector

13.7. Power indicator

14. Sample meters and its Software:

14.1. Non-returnable two Samples meters identical to the offered designs must be hand-carried and submitted with the Tender with maximum 15 days from tender closing date with a presentation at IDECO office.

14.2. 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 IDECO to reject the Tender. And this sample must comply with all tender requirements.

14.3. These samples shall be programmed to meet the previous IDECO Tariff scheme and features.

14.4. Full programming software with manual should be submitted with the offer.

14.5. IDECO will go through the configurations of the meter sample and make the proper   modification, so the tender/manufacturer will configure all of the meters to meet the needs of IDECO.

14.6. Any other related mentioned point in the tender shall be in the presentation.

14.7. Real time MDM presentation

15. 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.

15.1. The meters should be guaranteed against any manufacturing defects before and after installation for 14 years, in the event that a manufacturing defect is found in a meter before installation, a free replacement meter should be supplied and delivered to IDECO warehouses without bearing any costs on IDECO.

15.2. In the event that the meter fails after installation, 25% of meter price will be charged on the supplier as replacement fees, (defective meters will be counted at the end of each year and the delivery period for replacement meter will be as per tender requirement.

15.3.

15.4. Full online free software training for (2) IDECO engineers.

15.5. Each shipment required based on (request for delivery) shall be inspected in country of origin by IDECO engineers, and all Inspection Costs (Visa, Air Tickets, good Hotel, Accommodation, Transportation, etc.) should be mentioned in the tender per engineer per visit so it shouldn't be included with the offer price. And it should include the trip plane with time schedule

15.6. The vendor is highly preferred to have supplied at least 100000 meter of the same type for Middle East or Europe.

15.7. The meter should have the following sticker with size of 8 cmx3cm on the both side of the meter (in the main cover) 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 the main cover removed for one-time so the sticker will be rejected if the meter could be open (in any way) without crack the sticker. (Refer to IDECO for a softcopy of the seal).

15.8. The tenderer should supply 15 optical probe and 15 USB key (if needed) with the tender

15.9. IDECO engineer should approve the meter programing and configurations before shipping

15.10. 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.

15.11. The tenderer must attached PDF (text) softcopy (not scanned) for the technical offer.

15.12. The vendor should provide the following information in the offer for the meter :

       15.12.1.   Full meter communication protocols.
       15.12.2.   TCP/IP login connectionism.
       15.12.3.   Data encryption method.
       15.12.4.   Data Model.
       15.12.5.   Integration environment.

15.13. The vendor should provide the following information in the offer for the modem :

    15.13.1. Power and Power control

    1- Power Supply Voltage (What is the average/min/max of output voltage)

    2- Load Regulation (What is the max voltage drop under maximum load current)

    3- Rated/Max Current (What is the max permissible current)

    4- Power Control (Does the Meter controls the Modem Power)

    • Interface

    1- Interface type (UART or SPI)

    2-TTL level 3.3 or 5v

    3-Isolated or non isolated

    15.13.2.   Protocol

    1What is the messaging protocol

    2-Does it support setting and reading of all meter parameters or limited to a set of parameters

    3-Secured or Opened

    15.13.3.   Data Model

    1-What is the meter data model (DLMS/1107 or other)

15.14. The material safety data sheet (MSDS) of all equipment / materials is required to be submitted with the offer.

15.15. IDECO has the complete right to reply on contractor's clarifications during 7 days, and during this period there is not exemption from incurred penalty for the event.

15.16. After Awarding Tenders, winner tenderer will be assessment according to quality of good, delivery period, service after sale, and assessment weight will be considered in coming tenders' evaluation.

15.17. Euro one certificate shall be submitted during clearance process, in case the country of origin of the required materials from Europe countries.

15.18. The manufacturer shall print 128 c bar code in each item as below shape, and bar code character will be submitted to manufacturer at awarding date.

Technical particulars for single phase meter (To be completed by the Tenderer)

SCHEDULE (8).

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 availability in load profile		
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	Total power consumption	VA	

20	Power consumption in voltage circuit	VA	
21	Power consumption in current circuit	VA	
22	Power consumption in modem circuit	VA	
23	Meter constant	Imp per kWh	
24	Meter dimensions		
25	Material of terminal block connectors		
26	Meter weight	Grams	
27	Degree of Protection		
28	Is the meter equipped with phase failure Indicator on LCD?		
29	Is the meter equipped with Reverse run Indicator on LCD?		
30	Is the meter equipped with phase rotation Indicator on LCD?		
31	Is the meter equipped with energy direction status Indicator on LCD?		
32	Is the meter equipped with Communication Indicator on LCD?		
33	Is the meter equipped with low battery Indicator on LCD?		
34	Is the meter equipped with terminal cover removing record indicator on LCD?		
35	Is the meter equipped with bypass indicator on LCD?		
36	Could the meter be extended for repayment?		
37	What is the IP of the meter?		
38	Software Features		
39	Is the software upgrade free of extra charge		
40	All software features shall be provided in tender offer and in the following rows		

(Item 3) (400V L-L), Smart Three Phase Direct Electronic Meter, (10)100 A, Multi Tariff (4Tariffs), Class 1 KWH, Class 2 KVARH, 4-wire Direct Connection with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution

Dear tenderer it will be considered that you accept and agree all requirements unless you show comments and deviations of the requirements in your offer

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 in our tender:

    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 30m/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 1 for indoor and outdoor domestic applications with:

- Rated current of 10-100 A
- Rated Voltage of 400 ± 10% V (L-L)
- Frequency 50 HZ
- Relay rated current 110 A
- Electromagnetic Compatibility of 15kV according to IEC
- Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC
- Fast Transient Burst 4 kV for main circuits, 2 kV for auxiliary circuits, to IEC
- 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
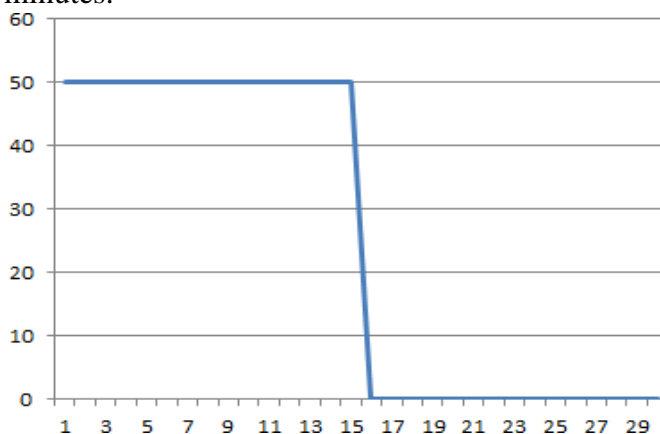- Impulse withstands voltage of (6kV)

3. Meter tariff, billing and display:

3.1. Active energy (import, export), as IEC 62053-22, IEC 62053-21, class 1

3.2. Reactive energy (4 quadrants and combined quadrants), IEC 62053-23, class 2.

3.3. Current average, maximum and cumulative demand measurement

3.4. Instantaneous and historical measurements of V, I, PF, phase angles, demands, frequency…etc.

3.5. The meter shall measure the import active energy with daily rates (up to four rates) as well as for export active energy. And the purchaser shall have ability to easily configure these four rates at the desired times of day.

3.6. 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 possibilityto read them through optical probe or remotely, **LCD should show not less than two month of historical billing data.**

3.7. The meter shall have the ability to measure the energy (Import and export) even if the one phaseis importing energy and other phases are exporting. To be approved by IDECO engineer.

3.8. The current sensors inside the meters must be CT based sensor and not shunt sensor.

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 intoseasons (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:

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

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.

73

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

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

3.10. The meter shall store the load profile in the meter memory. And the purchaser shall be able to choose any item listed in the O.B.I.S code using the software, and to configure the time interval for these readings (interval may differ from one channel to another). The default time interval is 30minutes.

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 (3.5), the historical readings mentioned in Item (3.6), 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.

The default setting for the auto cycle display is:
1.8.0 Import active energy (A+) total [kWh]

And for the push button is:

Table no.3

Number	OBIS code	Description
	1.8.0	Import active energy (A+) total [kWh]
	2.8.0	Export active energy (A-) total [kWh]
	16.8.0	Sum active energy without reverse blockade (A+ - A-) total [kWh]
	1.6.0	Import active maximum demand (A+) total [kW]
	32.7.0	Instantaneous voltage (U) in phase L1 [V]
	52.7.0	Instantaneous voltage (U) in phase L2 [V]
	72.7.0	Instantaneous voltage (U) in phase L3 [V]
	31.7.0	Instantaneous current (I) in phase L1 [A]
	51.7.0	Instantaneous current (I) in phase L2 [A]
	71.7.0	Instantaneous current (I) in phase L3 [A]
	0.9.1	Current time (hh:mm:ss)
	0.9.2	Date (DD.MM.YY)
	13.7.0	Instantaneous power factor

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 possibleto 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 which should be on from first button and uses information on the display to indicate theactive element.(the back light should be not work if the meter have of grid)

3.18. The display should be very clear (day and night) with not less than 8 (7+1) digits excluding the hidden 4 decimals for testing, and all main digits should be continuous showing on the screen.

3.19. The meter must to be equipped to generate a last gasp message(outage notification) for power loss and to save the event into memory and deliver the message to the AMI network before enter the low power mode.

3.20. POWER QUALITY ANALYSIS:
      3.20.1. Long and short outage detection with configurable time threshold.
      3.20.2. Voltage sags and swells detection with configurable voltage and duration thresholds.
      3.20.3. THD event detection with analysis up to 10th harmonic to reveal unusual conditions (preferred).

3.21 The meter should have ability to show current threshold on the screen

3.22 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.

4. Meter Hardware:

4.1. A push button for reading the display manually must be provided. As mentioned in Item (3.14).

4.2. The Non-volatile memory minimum retention time shall not be less than 20 Years which has to be confirmed by an official certificate.

4.3. The battery shall be changeable easily (inside sealed cover) and the lifetime shall not be less than 15 years which has to be confirmed by an official certificate. 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.

4.4. The lifetime of the offered meter has to be (20 years with 5% tolerance) which has to be confirmed by life timethird party certificate including LCD.

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

    4.5.1. Active Energy Impulse LED for meter testing, and the meter constant shall be in form of impulse/ KWh.
    4.5.2. Reactive Energy Impulse LED for meter testing, and the meter constant shall be in form of impulse/ KVARh.
    4.5.3. Alarm LED: the description is in point 7.0.
    4.5.4. Power and Relay LED: the description is in point 10.0.

And all LED's should have enough distance from other LED to eliminate any effect on test operation

4.6. During the meter lifetime, it does not 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.

4.7. 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.

4.8. The meter cover should provide 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.

4.9. The cover of meters should be capable of being easily sealed with lead and steel wire seals(the seals will supplied and installed by IDECO as per our stander of 1.1mm diameter for each),, and the hole shall be with suitable size for using two wire seals easily.

4.10. 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.

4.11. Materials of the main cover of the meter shall be non-transparent and the terminal cover shall be clear transparent, both covers must be high mechanical Impact strength (IK6). It should be of sufficient strength to protect the working parts and to be adequate to protect the meter against mechanical injury.

4.12. 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.

4.13. 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.

4.14. The equipment in this specification should be capable of accepting any size of conductor in the range 6 mm^2 up to 35 mm^2 of stranded copper or Aluminum conductor PVC or XLPE insulated andit should be compatible with our test bench.

4.15. Terminals of meters shall be made of a rigid one piece and not separated arranged as the following:

1 PH1 Supply	2 PH1 LOAD	3 PH2 Supply	4 PH2 LOAD	5 PH3 Supply	6 PH3 LOAD	7 N Supply	8 N LOAD

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

4.16. The terminal cover shall be re-enforced Polycarbonate or equivalent material, with minimum thickness 2.0 mm and the terminal cover shall be of extended type completely covering the terminal block and fixing holes.

4.17. The space inside the terminal cover should be sufficient to accommodate adequate length of external cables.

4.18. Terminal Block:

4.18.1. The width of the terminal block shall not exceed 130 mm and according to relative DIN standard.

4.18.2. The terminals should have insulating properties and mechanical strength.

4.18.3. The terminal block should be made from high conductivity material, flame retardant material (capable of passing the flammability tests) with nickel-plated brass or equivalent material for connecting terminals.

4.18.4. It should be rigidly fixed to the base of the meter so that it cannot be separated from the meter base without breaking either the meter base or the terminal (other suitable terminal installation could be accepted after test it in our lab) block and this fixing arrangement should be in parallel to the meter base in such a way that it cannot be viewed or approached from any part of the meter without breaking the meter.

4.18.5. The terminal should withstand glow wire test at 960 ± 15 ℃ and the terminal should withstand at least 135 ℃.

4.18.6. The terminal should be compatible with our test benches (ZERA , MT), and the screw position should be ready to test.

4.19. The screws shall not have pointed ends at the end of threads and shall be coated by (bimetallic) material of tinned / nickel plated brass or equivalent material to enable a good contact and prevent loosening at heat. And the vendor must provide a lab test certificate regarding the hardness of screw and terminal block.

4.20. The internal or plug and play modem and antennas should be fully covered.

4.21. The meter must fit the plastic panel that is used at IDECO. If the offered meter doesn't support IDECO panel, the vendor has the right to bear the cost of rebuilding the mold of plastic panel which is around 12,000 USD.

4.22. **It's highly preferred that the meter components to be manufactured from the next reference list (the vendor must fill the table) if other manufacturer are offered all information and certificates related to should be attached to be evaluated.**

Schedule No.9

Item No.	Description	Reference Manufacturer and Place of origin	Offered component manufacturer	Offered component place of manufacture	Offered component Name and model
1	SMT Resistance	TDK - Japan			
		YAGEO - Taiwan			
2	SMT Capacitor	UniOhm - Taiwan			
		Murata - Japan			
3	SMT Filter	Nippon Chemi-Con - Japan			
4	Electronics Capacitor	RUBYCON - Japan			
		ST Microelectronics - Europe			
5	MCU	Microchip - USA			
6	E2PROM	Maxim Microelectronics - USA			
7	FLASH ROM	Texas Instruments - USA			
8	CPU	Microchip - USA			
		ON Semiconductor - USA			
9	POWER REGULATOR	JRC - Japan			
		KDS - Japan			
10	CRYSTAL OSCILLATOR	SEIKO – Japan			
		Atmel-USA			
		Renesas-Japan			
11	Memory	Micron-USA			
		FUJITSU-Japan			
		Intel-US			
		Qualcomm-US			
		Infineon-Europe			
12	RAM	FUJITSU-Japan			
		Elpida-Japan			
		Rohm-Japan			
		TSMC-Taiwan			
		NXP-USA			
		Ericsson – Europe			
		Samsung –south Korea			
13	BATTERY	The supplier should be a regular members At EUROBAT			

4.23. (To be completed by the Tenderer, the supplier of the next components will have apriority in the meter evaluation.

Schedule No.10

Item No.	Description	Manufacturer	Place of Manufacturer	Place of Testing & Inspection	Name and model
1	Main board				
2	Power Supply Board				
3	LCD				
4	Push Buttons				
5	Communication Boards				
6	Terminals				
7	meter cover(Case)				
8	terminal cover				
9	Optical Communication port				
10	Relay disconnector			Test must include life span, longer life span will be highly preferred	
11	GSM Modem				
12	Terminals and screw				

4.24. Did the meter have a type test using the same previous components and parts?

4.25. The vendor should determine what type of measurements (for current sensor) the meter use, CT or shunt resistance or other technology:

	Measurements type	Supplier name
Phases		
Neutral		

4.26. The Tenderer must submit with his offer all the specifications, software manual, indicating ratings, weights, dimensions and time current characteristics of the offered materials.

4.27. 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.

5. Local Communications:

5.1. 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, high security data transfer is must and need to be approved .

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

5.3. The meter shall be able to be capable to connected with HHU via optical to make (setting, upload, download, relay disconnect …etc.).

6. **Local data Transfer (preferred)**

    1. The meter should have tow way local data transfer earthier with probe or with RF/ ID card or IR/probe

    2. When attaches this tool to the meter the meter should transfer the pre-selected data to the tool and the tool should transfer the preprogramed data (if any) to the meter

    3. The data transfer should be secured and related to the meter ID so the operator can determine the uploaded data and for which meter and read the data which downloaded from the metre

    4. (10) of RF/ID or IR/Probe with related red and right devise should be offered in this tender

7. **Meter software:**

    7.1. The meter's software shall be supplied with the meters with open license and security keys and programing 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 .

    7.2. The software module could be upgraded or modified upon to IDECO requests without extra charges while (IDECO) owns all software management properties.

    7.3. The software shall be submitted with very underlined 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 The vendor should make any required necessary 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).

    7.4. The meter software is preferred to have the ability of programing number of meters connected to the system remotely at once, monitor and configured at same time.

    7.5. The vendor shall provide IDECO with any needed support to program IDECO android devises to control themeter upon to IDECO request with the same modification condition in point 6.3.

    7.6.   The PC software highly preferred to connect to the meters remotely , and the tenderer should supply all the required to run the software using IDECO servers to support all the supplied quantity of meters.

    7.7. The meter firmware should be upgrade remotely with all required security stages

    7.8. The meter software can detect any new meter.

    7.9. The Vendor must provide all needed support for IDECO to develop android applications to cover all meters parameters, configurations, commands and data readings.

    7.10. The meter and PC software must have a log for all programming event containing the following data:

- Time and date
- User name
- Meter number
- Event type
- Programming details

8. <u>Anti-tampering features</u>

8.1. 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:

    8.1.1. Main cover opening.
    8.1.2. Terminal cover opening.
    8.1.3. Disconnecting one or more phases.
    8.1.4. High magnetic field exposure.
    8.1.5. Switching between phases.
    8.1.6. Neutral connection removed
    8.1.7. Load partially returned to earth when the phase and neutral reversed on incoming supply terminals
    8.1.8. Connecting bypass between incoming phase and outgoing phase

    8.1.9. Other anti-tampering features are highly preferred.

8.2. 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.

8.3. 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

8.4. The meter shall be provided with alarm flag (not symbols) displayed on LCD to indicate for all of the above (8) tampering cases 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

8.5. The meter should not be influenced by external strong magnetic fields or electrostatic DC discharge (up to 100 kV).

8.6. In addition to mentioned alarm flags the meter should have Alarm LED and it should be programmable in which event it should be on, IDECO shall approve this operation

8.7. The meter should have the energy Hiding feature as the following: when the meter have Main Cover Open Event a timer will starts for 300 hour, at the end of this timer the meter will change thedisplay on the screen to be Current time (hh:mm:ss) OBIS 0.9.1 instead of 15.8.0, in addition, the timer can be reset and disabled using PC software.

9. Electrical features and certifications:

9.1. Type test Certificate should be shown for the same meter accepted lab which shown in 9.11 and The tenderer should fill the next table.

Schedule No.11

Test name	Test lab	Test date	Test result
Tests of the mechanical properties			
Tests of climatic influences			
Accuracy measurement at different loads			
Effect of change of influence quantities on accuracy			
Effect of short-time overcurrent on the accuracy			
Self-heating			

Power consumption of the voltage and current circuits			
Fast transient burst test			
Electrostatic discharges			
Immunity to electromagnetic RFfields			
Immunity to conducted disturbances induced by RF fields			
Interference measurement			
Voltage dips and short interruptions			
Surge immunity test			
Insulation			

9.2. IDECO should witness in house type test in the factory.

9.3. 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 4 years.

9.4. 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.

9.5. The Tenderer shall also submit evidence that the meters can operate approximately 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, SGS or similar international organization.

9.6. The tenderer/manufacturer of the meters offered shall supply proof that his meter is used on third party MDM and a latter from the customer should be present in the offer.

9.7. The relay should be tested in respect of the following standard IEC Requirements for UC. In addition, it is necessary for the tendered to submit type test certificates of relay.

9.8. The metering element is shielded against external magnetic fields and electrostatic discharge, and protected against over voltage and high frequency disturbances.

9.9. However, according to the local rules it must be possible to do regular checking / testing at site with on-site test equipment.

9.10. Any presented certificates or approval...etc., requested in this tender must be for the same and exact offered meter without any deviation and it should be Issued by an accredited body from ILACE (is the international organization for accreditation bodies)

9.11. The tenderer should fill the next table :

Schedule No.12

No.	component	Presented/Not Presented
1	Type Test Of Energy Meters	
2	Certificate Of Predicted Lifetime For Meter	
3	Proof Of LIFETIME For Battery & LCD	
4	Test For Relay	
5	DLMS Certification	

10. Meter test

10.1. 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.

10.2. The meters shall be factory-calibrated and tested under conditions according to IEC so that when they are tested under the reference conditions stipulated in IEC , the percentage errors shall be farwithin the limits as specified in IEC . 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.

10.3. Power Losses: The losses in each voltage and current circuit shall be measured under reference condition to prove compliance with tables 1 and 2

10.4. Heating and Dielectric Tests: Tests shall be carried out to establish compliance with the requirements according to IEC. 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 lieu of type testing.

10.5. Insulation Test.

10.6. The meters shall be tested at pressure of 4kV for a period of 1 minute between all live terminals and earth.

10.7. Any other type or routine test can be requested by IDECO to do it in the factory or/and to get certification from previous mentioned labs.

10.8. The inspection of meters in the factory must be done according to the inspection sheet attached to the tender document.

11. Disconnect and Connect Relay :

11.1. The required meters shall be provided with internal disconnector (Relay) to be used for both remote and local connection/disconnection in addition to limit and control load current of the customer.

11.2. The relay should be:

11.2.1. All threshold , parameters and setting should be programmable , locally and remotely
11.2.2. All modes should control the meter without any needed permeation from the meter like connecting button

11.3. The relay should work on four modes:
11.3.1. **The Automatic Mode** for voltage and current limiting function to disconnect in overload or over voltage situation:

11.3.1.1. **Over Current** :when the current reach the set value (I1) for a period to be set (T1) for overload, relay should disconnect and connect a gain automatically after (T2) and repeat the operation, at least two current value and time thresholdshould be programed for the overload ,The default thresholds values should be :

1. First threshold $100 < I < 110$ A for continuous 7 minutes,
And it reconnects after 5 minutes.

2. Second threshold $I \geq 110$ A, for 1 second.
And it reconnects after 5 minutes.

11.3.1.2. **Over Voltage** : the voltage should have V1 for under voltage and V2 for over voltage and it should be disconnect instantaneously if the voltage increase more than V2 or decrease from V1. The default thresholds values should be :

1. Voltage $\leq$ 166 V disconnect immediately until the condition release
2. Voltage $\geq$ 265 V disconnect immediately until the condition release
3. The minimum disconnecting period should be 1 minutes

11.3.2. **Manual Mode**, this mode to be connecting/disconnecting by the utility using AMI and locally using PC software or hand held units HHU (to connect, disconnect after specific time) the manual disconnection should be programmable to take place after a given time from the manual disconnect command i.e. after 1, 5, 15, 30, 40… minutes up to 72 hours, The default thresholds values should be 1 minute for disconnection and the connecting order should act immediately.

11.3.3. **The Energy Mode** this mode to be disconnect the relay depend on energy consumption which will be set in KWH this feature should be default disabled and could be enabled and programed remotely and locally with value range 0-xxxxxkwh (we will use that as a type of prepaid meter)

11.3.4. **Lightning Mode:** (Normally deactivated) Smart street light management system whenever this mode is activated; the relay operation will follow a given table containing sunrise and sunset time for the whole year so the relay will connect the relay at sunset and disconnect at sunrise depend on meter location or other computable method without lifting sensor.

- Activation of lighting mode shouldn't cancel any other mode

11.3.5. **Meter should have clear way to show the relay status and the disconnection type using one LED with two coloring with explained description on the nameplate, to show overload or manual disconnection and to have clear screen massage. The functions should be as follows:**

11.3.5.1 **Over load Disconnection : Red Flashing**

11.3.5.2 **Manual Disconnection : Green**

11.3.5.3 **Meter Powered and Relay Connected : Red**

11.3.6. **The meter shall store all events related to the relay operation with specifying the source of the order, (over current with the current value , local order ,remote order) the meter must have log to show which phase is over load or over voltage if the meter disconnected by Automatic mode.**

11.3.7. **IDECO should approve the relay behavior for all mentioned and not mentioned cases.**

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

12.1. Colored IDECO logo ( )

12.2. Meter Type

12.3. Manufacturer and year of manufacturing

12.4. Voltage, phase(s), wire(s)

12.5. Meter Current

12.6. Frequency

12.7. Accuracy class

12.8. Number of pulses per KWH, KVARH

12.9. The words "Property of Irbid District Electricity Co. LTD"

12.10. Relay status

12.11. The plate shall carry a serial number (supplied by the purchaser). It shall specify the contract No. (IDECO-63**/2022**), and the year of manufacturing, the plate shall also carry a separate serial number from (xxxxxxxxxx) to (xxxxxxxxxx) (the numbers will supplied by IDECO to the factory)

12.12. IDECO contract No. xx**/xxx** and stock code as seen on page 2.

12.13. All packing cartoons and wooden boxes shall carry IDECO contract **No. 63/2022**

12.14. Flags numbers for tampering indication as in above tampering section item 7

12.15. 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.

12.16. Defective materials under guarantee period shall be return to IDECO STORES during six months from exiting material from IDECO stores.

13. Sample meters and its Software:

13.1. Non-returnable Sample meter identical to the offered designs must be hand-carried and submitted with the Tender within 15 days from tender closing date with a presentation at IDECO office.

13.2. 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, electrical and tender Specifications set out in this Document will entitle the Purchaser to reject the meter. And this sample must comply with all tender requirements.

13.3. These samples shall be programmed to meet the previous IDECO Tariff scheme and features.

13.4. Full programming software with manual should be submitted with the offer.

13.5. The purchaser will go through the configurations of the meter sample and make the proper modification, so the tender/manufacturer will configure all of the meters to meet the needs of the purchaser.

13.6. Any other related mentioned point in the tender shall be in the presentation.

14. E-sim Modem

14.1. The metre /modem must be able to send Last Gasp message in the case when meter loss of power and turn-off, the modem must send a message to the Head-End system specifying that the meter is now offline due to loss of power. And when the power is back, the modem must send a message to the Head-End system specifying that the meter has restored the power.

14.2. The meter /modem should have capability to push pre-selected event to the Headend system immediately after it registered in the meter, this feature should have program to control it regarding to the required event, queue control …. Etc.

14.3. The Cellular modem should be 4G/3G with automatic switch depend on signal strength

14.4. The E-sim modem is highly preferred to have capability to work with any telecommunication operator in Jordan after the end of contract and that should be proved and guaranteed.

14.5. E-Sim card should use close group and it shouldn't communicate with any device out of this group

14.6. The E-SIM card shouldn't be activated before installation and it will be activated upon to our request and the modem should go life for 14 years from first data transfer

14.7. Meter name plate should show the E-SIM number or serial number or any needed information to track or activate it in form of 128 C barcode.

14.8. The supplier should supply communication with all required confirmations from Jordanian Telecommunication Company and with suitable data amount which should be describe in the offer,

with the full support by the vendor during this time, this should be complete solution which should be included in the offer.

14.9. The solution should guarantee more than 98% online at any time and 100% as historical collected data otherwise IDECO have the right to apply penalty and didn't pay any payment for non-connected meter if it offline more than 2 months

14.10.　IDECO could install the meters in different locations and areas without committing to a specific quantity in the area.

14.11.　The Cellular operator and the supplier must have no access to the system without IDECO Permission

14.12.　Sim card live information manager must be provided with the solution.

14.13.　The meter shall be able to display signal strength on LCD as a number in the button display list and must be readable using PC software and AMI.

14.14.　The e-Sim IMEI or MAC address number must be readable via PC software and AMI.

14.15.　The modem must have a normal SIM slot as backup and the user can select via PC software between E-SIM and normal Sim.

15. **Special Requirements**

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

15.1. The meters should be guaranteed against any manufacturing defects before and after installation for 14 years, in the event that a manufacturing defect is found in a meter before installation, a free replacement meter should be supplied and delivered to IDECO warehouses without bearing any costs on IDECO.
15.2. In the event that the meter fails after installation, 25% of meter price will be charged on the supplier as replacement fees, (defective meters will be counted at the end of each year and the delivery period for replacement meter will be as per tender requirement.
15.3.
15.4. Full online free software training for 2 IDECO engineer.

15.5. The tenderer should supply 15 optical probe and 15 USB key with the tender

15.6. Each shipment required based on (request for delivery) shall be inspected in country of origin by IDECO engineers, and all Inspection Costs (Visa, Air Tickets, good Hotel, Accommodation, Transportation , etc.) should be mentioned in the tender per engineer per visit so it shouldn't be included with the offer price. And it should include the trip plane with time schedule

15.7. If a visit to a factory is required for evaluation purposes before signing the agreement, the tenderer should do all necessary arrangement for this visit; the related cost of visit by IDECO team will be borne by the manufacturer (this will related to the vendor acceptance and it should

be mentioned in the offer)

15.8. The vendor is highly preferred to have supplied at least 100000 meter of the same type for Middle East or Europe.

15.9. The meter should have the following sticker with size of 8 cmx3cm on the both side of the meter(in the main cover) 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 the main cover removed for one- time so the sticker will be rejected if the meter could be open (in any way) without crack the sticker. (Refer to IDECO for a softcopy of the seal).

15.10. IDECO engineer should approve the meter programing and configurations before shipping

15.11. 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.

15.12. *The tenderer must attached PDF (text) softcopy (not scanned) for the technical offer .*

15.13. The material safety data sheet (MSDS) of all equipment / materials is required to be submittedwith the offer.

15.14. The purchaser has the complete right to reply on contractor's clarifications during 7 days, andduring this period there is not exemption from incurred penalty for the event.

15.15. After Awarding Tenders, winner tenderer will be assessment according to quality of good, delivery period, service after sale, and assessment weight will be considered in coming tenders'evaluation.

15.16. Euro one certificate shall be submitted during clearance process, in case the country of origin ofthe required materials from Europe countries.

15.17. The manufacturer shall print 128 c bar code in each item as below shape, and bar codecharacter will be submitted to manufacturer at awarding date.

Technical particulars for three phase meter (To be completed by the Tenderer) – schedule no.13.

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 availability in load profile		
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	Total power consumption	VA	
20	Power consumption in voltage circuit	VA	
21	Power consumption in current circuit	VA	
22	Power consumption in modem circuit	VA	
23	Meter constant	Imp per kWh	
24	Meter dimensions		
25	Material of terminal block connectors		
26	Meter weight	Grams	
27	Degree of Protection		
28	Is the meter equipped with phase failure Indicator on LCD?		
29	Is the meter equipped with Reverse run Indicator on LCD?		
30	Is the meter equipped with phase rotation Indicator on LCD?		
31	Is the meter equipped with energy direction status Indicator on LCD?		
32	Is the meter equipped with Communication Indicator on LCD?		

33	Is the meter equipped with low battery Indicator on LCD?	
34	Is the meter equipped with terminal cover removing record indicator on LCD?	
35	Is the meter equipped with bypass indicator on LCD?	
36	Could the meter be extended for repayment?	
37	What is the IP of the meter?	
38	Software Features	
39	Is the software upgrade free of extra charge	
40	All software features shall be provided in tender offer and in the following rows	

Meters Inspection during Factory Visit

1. Inspect pallets and boxes to have the correct information regarding serial numbers, box numbers.Ok ☐Not Ok ☐ Remarks……………………………
2. Check the quantity of manufactured meters.
   Ok ☐Not Ok ☐ Remarks……………………………

3. Inspect meter nameplate to have all the correct information.
   3.1. Colored IDECO logo
   3.2. Meter Type
   3.3. Manufacturer and year of manufacturing
   3.4. Voltage, phase(s), wire(s)
   3.5. Meter Current
   3.6. Frequency
   3.7. Accuracy class
   3.8. Number of pulses per KWH, KVARH
   3.9. The words "Property of Irbid District Electricity Co. LTD"
   3.10. Relay status
   3.11. Serial number
   3.12. IDECO contract No.
   3.13. Flags numbers for tampering indication
   Ok ☐Not Ok ☐ Remarks……………………………

4. Inspecting Meters configuration:
   The meter must be preconfigured by the supplier as per IDECO requirements and the meters mustmatch the configurations that was agreed on.

   Ok ☐Not Ok ☐ Remarks……………………………
5. Second Element operation:
   phase and neutral measurement and registers test.

   Ok ☐Not Ok ☐ Remarks……………………………
6. LED Operation Test. Ok ☐Not Ok ☐ Remarks……………………………
7. Load profile Operation Test. Ok ☐Not Ok ☐ Remarks……………………………
8. Billing Operation Test. Ok ☐Not Ok ☐ Remarks……………………………
9. Relay Operation Test. Ok ☐Not Ok ☐ Remarks……………………………
10. RTC Operation Test. Ok ☐Not Ok ☐ Remarks……………………………
11. MD Test. Ok ☐Not Ok ☐ Remarks……………………………
12. Taser Test. Ok ☐Not Ok ☐ Remarks……………………………
13. Connectivity to AMI test. Ok ☐Not Ok ☐ Remarks……………………………
14. PC software Test. Ok ☐Not Ok ☐ Remarks……………………………
15. Screen Hiding Feature Test. Ok ☐Not Ok ☐ Remarks……………………………
16. Meter Event Test. Ok ☐Not Ok ☐ Remarks……………………………
17. Checking all Tender Requirements. Ok ☐Not Ok ☐ Remarks……………………………

18. Checking Certificates. Ok ☐ Not Ok ☐ Remarks…………………………

19. Routine test: this test must be done on 4% of all inspected quantity and shall perform the following test points as per meter type: Ok ☐ Not Ok ☐ Remarks……………………………

    19.1.   Single Phase meters:

        19.1.1. Starting Test.

        19.1.2. No-load test.

        19.1.3. Register Test.

        19.1.4. Accuracy at different loads:

	Import/Export Power	
	Power Factor	Current
1.	1	Imax
2.	1	Ib
3.	1	0.1Ib
4.	1	0.05Ib
5.	0.5L	Imax
6.	0.5L	Ib
7.	0.5L	0.1Ib
8.	0.8C	Imax
9.	0.8C	Ib
10.	0.8C	0.1Ib

    19.2.   Three Phase meters:

        19.2.1. Starting Test.

        19.2.2. No-load test.

        19.2.3. Register Test.

        19.2.4. Accuracy at different loads:

	Import/Export Active Power Balanced Load		Import/Export Active Power Unbalanced Load		Import/Export Reactive Power Balanced Load		Import/Export Reactive Power Unbalanced Load	
	Power Factor	Current	Power Factor	Current	Power Factor	Current	Power Factor	Current
1.	1.0	Imax	1.0	Imax	sinφ=1.0	Imax	sinφ=0.5L	Imax
2.	1.0	Ib	1.0	Ib	sinφ=1.0	Ib		
3.	1.0	0.5Ib	1.0	0.5Ib	sinφ=1.0	0.5Ib		
4.	1.0	0.1Ib	1.0	0.1Ib	sinφ=1.0	0.1Ib		
5.	1.0	0.05Ib	0.5L	Imax	sinφ=1.0	0.05Ib		
6.	0.5L	Imax	0.5L	Ib	sinφ=0.5L	Imax	The test points above must be done on all phases separately	
7.	0.5L	Ib	0.5L	0.5Ib	sinφ=0.5L	Ib		
8.	0.5L	0.5Ib	0.5L	0.2Ib	sinφ=0.5L	0.5Ib		
9.	0.5L	0.2Ib			sinφ=0.5L	0.2Ib		
10.	0.5L	0.1Ib			sinφ=0.5L	0.1Ib		
11.	0.8C	Imax	The test points above must be done on all phases					
12.	0.8C	Ib						

13.	0.8C	0.5Ib	separately		
14.	0.8C	0.2Ib			
15.	0.8C	0.1Ib			

(ITEM 4) **Headend:**

The Tenderer or manufacturer should supply a compatible (20 year's license for the supplied meters) automatic meter infrastructure software with the ability to run all the supplied quantityof meters with online support after installation and it shall have the following specifications:

1. The system must detect any new meter automatically

2. The system shall monitor all the registers and readings for all the supplied quantity of meters.

3. The system shall monitor all type of events and alarms, with integrated alarm system.

4. The system shall have the ability to control the external MMCCB and Relay from disconnecting and reconnecting, and relay status.

5. The system shall have the ability to export reports for all the mentioned data above.

6. The system shall have the ability to save a historical data for all the mentioned data above andsave the customer details.

7. The Tenderer or manufacturer must install this software in IDECO Servers . In addition, the Tenderer or manufacturer shallprovide all the support that IDECO needs to run the software.

8. The system should monitor the online and offline status for all supplied quantity of meters.

9. The system should provide data about online and offline history.

10. There shall be a way to import meters to system from excel or other databases.

11. The system shall have the ability to manage customer information along with meter numbers.

12. The system shall have the ability to program multiple meters altogether with single order.

13. Free two-year technical support is required.

14. The supplier should be responsible to install the software in IDECO server with in site training for IDECO engineer

15. The system must have the ability to present customizable data for all meters on same page for purposes of printing and reporting.

16. The system must support Arabic characters in customer information.

17. The system must have non-archive page to show all the meters which trying to connect to system without being archived.

18. The system must have a page to show meter connection status and categorized to the following (online, never online, never offline, ever offline, 24 hours offline, 6 hours offline, 1 hour offline).

19. The system should have tree power losses calculation:

- The user must be able to create a Line in which the user will specify the meter/meters at the beginning of the line (Check Meter/Meters) and also specify the meter/meters at the end of the line (Main Meter/Meters). This line model will not affect the original place of meter in AMI tree.
- The line loss will be the difference between the (Check Meter/Meters) and (Main Meter/Meters) using the formula stated below.
- The system must have another window to display the results which contains the following table for selected line/lines:

No.	Time	Active(Imp)(kWh)							
		Start Energy Check	End Energy Check	Total Energy Check	Start Energy Main	End Energy Main	Total Energy Main	Total Loss(kWh)	Total Loss Rate%
1	Date/Time	50	250	200	100	275	175	25	12.5%
2	Date/Time			= End Energy Check - Start Energy Check			= End Energy Main - Start Energy Main	=Total Energy Check - Total Energy Main	= 100 * Total Loss(kWh) / Total Energy Check

- Graphs that has the following data:
  a. Total Energy Check
  b. Total Energy Main
  c. Total Loss (kWh)
  d. Total Loss Rate %

- The table and graphs must be in the same window with the ability to choose the starting and ending date/time and the data could be displayed (by hour, by day, by month, by year)
- The system must support multiple meters in check side and support multiple meters in main side.

20. The system must be able to display all mentioned data above as (by hour, by day, by month, by year).

21. The system must have (Non Archive Page) that will display the list of meters that are trying to connect to the system with no added archive.

- The page must have the following data:

a. Meter Number.
b. Last communication date and time.
c. First communication date and time.
d. IP address and Port.

- The page must have an option for selecting meters from the list (using checkbox) and then add the archive for these selected meters (import to AMI) via pop-up window where we canselect the archive parameters like (where to add, meter type, task, etc...)
- the meter must get erased from this list after importing.
- The system must be able to report all data in this page.

22. The system shall be able to change the meter security password automatically when the meter connects to the AMI system for the first time. The new passwords will be pre-configured by the user and then selected in the meter archive.

23. The system should have a page to manage automatic task which must have the following features:
• Task list with detailed parameters regarding data intervals and time of execution.
• Real-time reports about task status (running/successful/failed/stopped) for all list of meters and connection status with percentage of data collections. And this page must have control button to (run/stop/pause/re-run) the task for any selected meter/s (using checkbox).
• Temporary task or recall task must be available and could be applied to a number of selected meters (using checkbox) for a selected period of time.

24. The system must have a page for RTC synchronization in which the user can give sync order to a number of selected meters (using checkbox).

25. The system must have a log of all user operation as the following operations:
• Disconnect and connect orders with timestamp, username and meter number.
• Meter archive add/import with timestamp, user name and meter number.
• Meter archive remove with timestamp, user name and meter number.
• Programming event with timestamp, user name, meter number, type of programming, detailed parameter of programming.

26. The system must have a tree model in which meters will be categorized as per IDECO indexing system with 3 level. And the system must have a page to move a selected number of meters (using checkbox) from a tree branch to another.

27. The meter must have capability to connect with third party Headend (direct connection between the meter and the Headend, the vendor should confirm that and if that will need extra cost it should be shown in the offer failure to comply with this requirement could lead to reject the offer

28. The vendor must provide all needed support to integrate the Head-end System to IDECO Systems using Web-service API to support all functions required in this document.

29. The Vendor should provide full description for on premise system required to operate all the meters

SCHEDULE 14

Approval and Departures from Technical Specifications

The tenderer must the next tables for all items

1. Climate Conditions:

Item	Approved	Deviation
1		

2. Meter rated parameters:

Item	Approved	Deviation

Schedule No. (15)

Program for Manufacture and Delivery

Below schedule shall be completed by the tender and the periods entered shall be binding on the contractor. It is essential that the overall period for completion of the contract is adhered to and the programmer shall be formulated accordingly. All periods entered below are to be in weeks and relate to the placing of the contract.

No	Item	Manufacturing Period	Ex-Works Delivery	Aqaba Port Delivery
1	Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution.			
2	Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with Ethernet modem.			
3	(400V L-L), Smart Three Phase Direct Electronic Meter, (10) 100 A, Multi Tariff (4Tariffs), Class 1 KWH, Class 2 KVARH, 4-wire Direct Connection with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution			
4	**integration of meters into IDECO's Head-End System**			
5	**integration of Head-end System into IDECO's Meter Data Management System**			
6	**Headend system with 3 year S&M for all meters**			

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 three years. And the priority will be given to tenderer who minimize the purchase order value and maximize the number of purchase orders.

Schedule 16 (Manufacturing & Delivery)

Data Required	Item 1 Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with E-Sim 3,4G modem	Item 2 Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with Ethernet modem.	Item 3 (400V L-L), Smart Three Phase Direct Electronic Meter, (10) 100 A, Multi Tariff (4Tariffs), Class 1 KWH, Class 2 KVARH, 4-wire Direct Connection with E-Sim 3,4G modem
Manufacturer			
Manufacturing Place			
Inspection Place			
No. of purchase orders within 3 years. Highly recommended (**10 orders**)			
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 for option no.1

➢ 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** based on the fixed price for required materials, and the offered price shall valid during three years.

Schedule 8

No.	Quantity(PCS) Within 3 years	Material	Unit Price Currency ………..	Total Price Currency ……….
1	250,000	Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution.		
2	50,000	Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with Ethernet modem.		
3	10,000	(400V L-L), Smart Three Phase Direct Electronic Meter, (10) 100 A, Multi Tariff (4Tariffs), Class 1 KWH, Class 2 KVARH, 4-wire Direct Connection with E-Sim 3,4G modem and communication solution with operational time for 14 years, with AMI solution		
4	1	integration of meters into IDECO's Head-End System		
5	1	integration of Head-end System into IDECO's Meter Data Management System		
6	1	Headend system with 3 year S&M for all meters		
Total Contract Price (in words)				

Name(s) of Sureties:
Name(s) and Address of Tenderer:
Tele / Fax: Answer Back Code:
Signature: Position of Signatory:

Price Summary for option no. (2).

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** based on the fixed price for required materials, and the offered price shall valid during three years.

Schedule No. 17

No.	Quantity(PCS) Within 3 years	Material	Unit Price Currency ………..	Total Price Currency ………..
1	250,000	Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with E-Sim 3,4G modem		
1.1	14 year	communication solution with operational time for one year, with AMI solution for item no.1.		
2	50,000	Single phase, Electronic, kilowatt-hour meter, (10-80) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, with Ethernet modem.		
3	10,000	(400V L-L), Smart Three Phase Direct Electronic Meter, (10) 100 A, Multi Tariff (4Tariffs), Class 1 KWH, Class 2 KVARH, 4-wire Direct Connection with E-Sim 3,4G modem		
3.1	14 year	communication solution with operational time for one year , with AMI solution for item no.3		
4	1	integration of meters into IDECO's Head-End System.		
5	1	integration of Head-end System into IDECO's Meter Data Management System.		
6	1	Headend system with 3 year S&M for all meters		
Total Contract Price (in words)				

Name(s) of Sureties:
Name(s) and Address of Tenderer:
Tele / Fax:　　　　　　　　　　　　　　Answer Back Code:
Signature:　　　　　　　　　　　　　　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 No. 18

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.	
6	Third party for inspection	
6.1	Third party name	
6.2	Inspection cost by third party	

Offer main details

➢ **The bidder shall fill the following table otherwise his offer may be not considered.**

Schedule No.19

NO.	Description	
1	Value and currency of Bid Bond	
2	Payment method (open account/ LC/ Other)	
3	Offer validity	

Tender Agreement Summary
Tender No. (63/2022)

Dear Sir;

Having examined the conditions of Contract, specification and schedule for the above Works, the undersigned, offer to manufacture, supply, work, test, and deliver the said works described in the specification and schedules and in accordance with the said conditions of contract, for the sum of ……………………...............……………………or such other sum as may be ascertained in accordance with the said conditions.

We agree that this tender shall be held open for acceptance or rejection for the 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.

Unless and until a formal agreement is prepared and executed, this tender, together with your written acceptance thereof, shall constitute a binding contract between us.

If our tender is accepted, we will deliver to Irbid District Electricity Co. Ltd. Within (30) 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: -..

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 calculated from the date of Order Letter Awarding, 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.

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 Ibid District Electricity and we will provide details of the materials to be shipped in good time for Ibid District Electricity to arrange for the said marine insurance.

A guarantee / Maintenance Period will apply to each section of the works of twelve-to- Eighteen months from the date of accepting the materials at IDECO stores or in case of projects from the date of setting to work.

We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this ....day of   /   / 2022.

Signature……………......................in the capacity of ...……………………………………………

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

Address.................................……………………. Occupation……......................................