Document for Tender No. (20/2023)
Supply of
(120 Pages)

- **Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)**
- **Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)**
- **Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)**
- **Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)**

Tenderer:

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

Tender summary mentioned in page (4-7) shall be fill by the tenderer, otherwise his tender

List of Contents

Table 1

Invitation to Tender No. (20/2023)

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 **April 12, 2023.**

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 not later than 2 pm (local time) due **April 12, 2023.**

Item No.	Quantity (pcs)	Description	Stock Code
1	5,000	**Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)**	6625-2158
2	5,000	**Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)**	6625- 2158
3	2,000	**Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)**	6625-2158
4	2,000	**Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)**	6625- 2158

Tender Summary for Tender No. 20/2023

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**	
		Exclude Sales taxes& Custom	
		exempt	
	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:			
Payment Method			
Tenderer IBAN (in case of Open Account)			

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**

Departures

Departures from	**Technical specifications**	**Required**	**offered**
	Special requirements	**Required**	**offered**

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**

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:

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

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

Committee member **Committee member**

GENERAL CONDITIONS

- The below are general conditions of contract for the supply and delivery of plant and materials based on United Nations economic commission for Europe publication ref.: me/ 188 Geneva. March, 1953.

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." 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" whose 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 effected 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.

2. Formation of Contract

2.1. The contract shall be deemed to have been entered into when the purchaser has sent an acceptance in writing before the time set in the tender for acceptance or any such later date extended by the tenderer at the request of the purchaser.

2.2. 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.

2.3. 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, also the purchaser shall have the absolute right to increase the quantities in such manner that the increment does not exceed the amount of 25% of the total price payable under the contract, however; the same prices awarded and any other relevant conditions shall remain the same for this purpose. This right is valid during the tender validity and within 120 days from the date of the order letter, and during delivery period.**

2.4. 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.

2.5. Prices: The Tender calls for firm prices.

3. Drawings and Descriptive Documents

3.1. 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.

3.2. 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.

a. If it is expressly so agreed, or

b. 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.

3.3. 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.

3.4. 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.

4. 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.

5. Inspection and Testing

5.1. 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.

5.2. 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.

5.3. **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.

5.4. 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.

5.5. 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.

5.6. Unless otherwise agreed, the Vendor shall bear all the expenses of tests carried out in his works.

5.7. 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.

6. 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.

7. Delivery:

7.1. Unless otherwise agreed the delivery period shall run from the latest of the following dates:

- **a.** The date of the formation of the contract as defined in clause 2.
- **b.** The date on which the Vendor receives notice of the issue of a valid import license where such is necessary for the execution of the contract.
- **c.** The date of the receipt by the Vendor of such payment in advance of manufacture as stipulated in the contract.

7.2. 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.

7.3. If a fixed time for delivery is provided for in the contract and the Vendor fails to deliver within such time or any extension thereof granted under paragraph 2 hereof, the purchaser shall be entitled, on giving to the Vendor within a reasonable time notice in writing, to claim a deduction of the price payable under the contract. Such deduction shall be calculated at the rate of one half of one percent of that part of the price payable under the contract which is properly attributable to such portion of the plant as cannot in consequence of the said failure be put to the use intended for each complete week of delay commencing on the due date of delivery, but shall not exceed a maximum percentage deduction of ten percent. 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.

7.4. 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.

7.5. 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.

7.6. 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.

7.7. 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.

8. Force Majeure

8.1. 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.

8.2. 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.

8.3. 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.

8.4. Payment:

8.4.1 Terms of Payment:

1. **The company prefers to deal with the supplier on an open account basis, and the payment to be made 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 Payment will be released within <u>one month</u> after the receipt of goods and**

acceptance at IDECO stores.

c. The Payment will be released on first week of each month.

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), and those document shall be legalized for shipping purposes.

b. Payment will be released after submitting IDECO's acceptance certificate to the bank within <u>one month</u> after receipt of goods at IDECO's stores.

c. The Payment will be released on first week of each month.

8.4.2 Currency of Payment: The contract price will normally be paid in the currency or currencies in which the price has been stated. The purchaser, however, reserves the right to make payments in the currencies of the countries of origin of goods and services at the exchange rates applicable at the time of payment of the contract price.

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

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

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

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

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

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

unreasonably delayed.

9. Guarantee:

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

9.2. 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.

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

9.4. 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.

9.5. 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 months from the date the material was ready for dispatch ex-works.

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

9.7. 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.

9.8. 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 appears and shall give him every opportunity of inspecting and remedying them.

9.9. 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.

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

9.11. 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.

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

9.13. 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.

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

9.15. 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.

9.16. 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.

9.17. 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.

9.18. 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.

10. Relief:

10.1. 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.

10.2. 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.

10.3. 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.

10.4. 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.

10.5. 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.

10.6. 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.

11. Limitation of Damages:

11.1. 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.

11.2. 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.

12. 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.

13. Arbitration and Law Applicable:

13.1. 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.

13.2. 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.

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. 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.

16. The purchaser 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.

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**. (20/2023)** 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 opening the tenders, 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 equal to (10) percent of the total amount of the order within (30) days from date of receipt of the order. Any delay will be subject to delay penalty. If the successful tenderer fails for any reason to submit the required performance bond within (30) days, the purchaser will confiscate the bid bond and the awarding letter will be cancelled too.

21. 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.

22. The performance bond should be valid for a period expiring at least one year after receipt of the last consignment in IDECO warehouse.

23. 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.

24. Prices are highly recommended to be on the basis of C&F IDECO STORES. However, C&F AQABA port or Amman customs are also accepted.

25. The tenderer may state the tender price in Jordanian Dinars. If, however, a portion of the tenderer's expenditure under the contract is expected to be made in countries other than Jordan he may state a corresponding foreign currency portion of the tender price in the currencies of those other countries.

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.

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. The successful tenderer has to submit a performance bond equal to (10) percent of the total amount of the order within (30) days from date of receipt of the order. Any delay will be subject to delay penalty. If the successful tenderer fails for any reason to submit the required performance bond within (30) days, the purchaser will confiscate the bid bond and the awarding letter will be cancelled too.

32. 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.

33. 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.

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

General Requirements
Standards and Regulations

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

1. Design and Construction:

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

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

All equipment is to operate without undue vibration and with the least possible amount of noise and is not to cause a nuisance. All equipment is to be designed to minimize the risk of fire and any damage, which may be caused in the event of fire.
The equipment is also to be designed to prevent ingress of all vermin, accidental contact with live parts and to minimize the ingress of dust and dirt. The use of materials, which may be liable to attack by termites or other insects, is to be avoided.

2. Compliance with Standards:

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

3. Statutory Regulations

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

4. Language

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

5. Correspondences

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

7. 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.

8. 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.

9. 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.

10. Drawings and catalogues

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

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

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

The drawings are to be submitted in quadruplicate and as soon as possible after the commencement date of the contract, and in any case in sufficient time to permit modifications to be made, if such deemed necessary by the Engineer without delay in the delivery of the contract work. The drawings submitted are to be modified as necessary if requested by the Engineer and resubmitted for final approval. If the contractor requires urgent approval of any drawing to avoid delay in the delivery of the contract works, he is to advise the Engineer accordingly when submitting the drawing. One copy of each drawing and diagram shall be sent direct to the purchaser. It is to be understood, however, that approval of the drawings will not exonerate the contractor from any responsibility in connection with the work. After all items of material have been manufactured and accepted three 35mm negatives of each drawing previously approved is to be provided together with one reproducible on gauge polyester base film or similar and two prints on heavy gauge white paper from such drawings as may be required to show the

detail and arrangement of the material as made. All drawings submitted by the contractor or by any sub-contractor are to have the following particulars in the lower right hand corner in addition to the contractor's name:

IRBID DISTRICT ELECTRICITY COMPANY, CONTRACT NUMBER (20/2023).

11. 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.

12. 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.

13. Packing

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

Tube ends and other similar open ends are to be protected from both external damage and ingress of dirt and moisture during transit and while at purchaser's stores. Flanged pipes are to have their open ends protected by adhesive tape or jointing and then be covered with a wooden blank flange secured by service bolts. Precautions are to be taken to protect shafts and journals where they rest on wooden or other supports likely to contain moisture. At such points, wrappings impregnated with anti-rust composition or vapor phase inhibitors are to be used with sufficient strength to resist chafing and indentation due to movement which is likely to occur in transit. Protective wrappings and impregnation are to be suitable for a period of three months. In the case of ball or roller bearings installed in any items of material, precautions are to be taken to avoid indentation of the bearing races.

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

Where parts are required to be bolted to the sides of the case, large washers are to be used to distribute the pressure and the timber is to be strengthened by means of a pad.
Where practicable, all indoor items such as electric motors, switch and control gear, instruments and panels, machine components, etc., are to be cocooned or covered in polyethylene sheeting, sealed at the joints and the enclosure provided internally with a 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.

Inspection and Testing

1. **General *Requirement***

The whole of the material by the contract will be subject to inspection and testing by the engineer during manufacture and on completion. The approval of the engineer or the passing of any such inspection or test will no, however, prejudice the right of the purchaser to reject the material if it fails to comply with the specification when erected or to give complete satisfaction in service. The costs of all tests and inspection shall be borne by the contractor and shall be deemed to be included in the contract price. Before any material is packed or dispatched from the main or sub-contractor's works, all tests called for are to have been successfully carried out in presence of the engineer.

Adequate notice shall be given when the material is ready for inspection or test and every facility shall be provided by the contractor and his inspection and his sub-contractors to enable the Engineer to carry out the necessary inspections and tests.

Triplicate copies of all principal test records and test certificates shall be supplied to the Engineer for all tests carried out in accordance with the provisions of the contract.

2. ***Sub-Contractors***

Within two months of acceptance of the tenders the contractor shall forward to the engineer a list of all sub-orders placed or intended. The contractor shall submit three copies of all sub-orders or selected by the engineer for progress or inspection. One copy of all drawings referred to in the sub-order is to be submitted unless otherwise agreed by the engineer. The drawings and sub-orders submitted to the engineer will cover all major components which are subject to electrical and mechanical pressure or stress when the material is in operation and also auxiliaries and stores which will be dispatched to site direct from the sub-contractor's work. For the purpose of this clause inter-works orders are to be treated as sub-order. Sub-orders are to include a statement advising the sub-contractor that the items being order will be subject to inspection and test by the Engineer. It is important that all copies of such orders are clearly marked with the main contractor's name and the following reference:

IRBID DISTRICT ELECTRICITY Co. CONTRACT No (20/2023).

Sub-Contractors are to comply with all the applicable requirements of this specification. Orders issued by the sub-contractor are also to include the main contractor's reference on their sub–order in addition to the above–mentioned heading.

3. ***Material Tests***

The contractor shall provide test prices as required by the engineer to enable him to determine the quality of the material supplied free of charge and any cost of the tests shall be borne by the contractor. If any test pieces fail to comply with the requirements of the appropriate specifications for the material in question, the engineer may reject the whole of the material represented by that piece, the contractor's designers and metallurgists will be consulted before any material is so rejected. In the event of the engineer being furnished with the certified particulars of the tests which have been carried out for the contractor by the suppliers of the material, he may, at his own discretion, dispense with the previously mentioned tests entirely.

4. **Tests at Manufacture's Works**

Works tests shall include all routine, electrical, mechanical and hydraulic tests in accordance with the relevant IEC standard or other standard may be approved except where departures there from and modifications thereto are embodied in this specification. For material not covered by an IEC or British standard or specifically mentioned in this specification the tests shall be agreed with the Engineer. After satisfactory completion of the witnessed tests at the works, the material shall be submitted for the engineer's approval preparatory to shipping. No item of material is to be dispatched to site until the Engineer has given his approval in writing.

5. Test Certificates

Triplicate sets of all principal test records test certificates and performance curves shall be supplied for all tests carried out in accordance with the provisions of this contract. These test records, certificates and performance curves shall be supplied for all tests, whether or not they have been witnessed by the engineer. The information given in such test certificates and curves shall be sufficient to identify the material or equipment to which the certificates refers and should also bear the contract reference and heading as given in clause 7.2 of this section.

6. Rejection of Plant

IF Any item of material or component which fails comply with the requirements of this specification in any respect whatsoever at any stage of manufacture, test, erection or on completion at site may be rejected by the engineer either in whole or in part as he considers necessary, and after adjustment or modification if so directed by the Engineer, the contractor shall submit the item for the item for the further inspection and / or test. In the event defects of such a nature that the requirements of this specification cannot be fulfilled by adjustment or modification shall be replaced by the contractor, at his own expense, to the entire satisfaction of the engineer.

7. Maintenance

The contractor is to guarantee the efficient and good working of the material supplied under the contract for a period of twelve months (Gregorian) from the date of delivery of the material to Irbid, in accordance with the General conditions of contract.

8. Tests

All tests meet the requirements of latest international standard mentioned in the contract or any relevant standard.

Irbid District Electricity Co.

Form of Bid Bond

Tender No. (20/2023)

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. (20/2023)

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

A) Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I):

Dear tenderer it will be considered that you accept and agree allrequirements unless you show comments and deviations of therequirements 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 5-100 A
2.2. Rated Voltage of 230 V ± 20%
2.3. Frequency 50 Hz
2.4. Relay rated current (min 100 A)
2.5. relay short circuit current 6KA
2.6. Active Energy Class 1.
2.7. Electromagnetic Compatibility of 15kV according to IEC61000-4-2
2.8. Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC61000-4-3

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

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

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

2.12. 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.

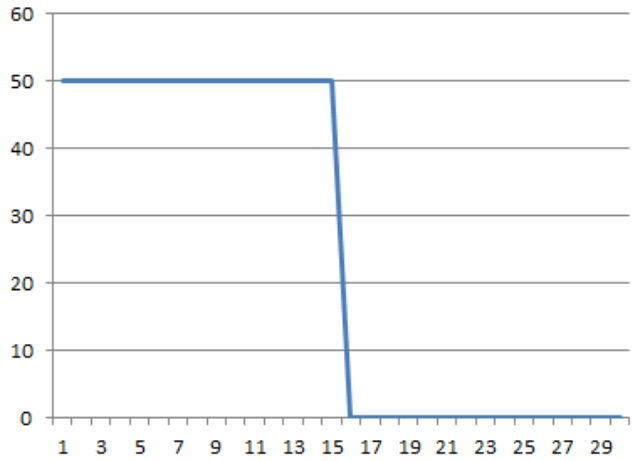
3.7. Tenders are requested to quote meter with a maximum demand, the meter shall be able to be programmed to activate the maximum demand within the specified daily period for a specific season. So the meter shall be able to be programmed so that the year will be divided into seasons (up to 12 seasons, 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. The meter must be Holley model DDSY283SR and support the modems delivered for this model previously.

4.2. The meter design must be according the following image:

4.3. 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.

4.4. 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.

4.5. The meter shall be equipped with three LED:

4.5.1. 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

4.5.2. Alarm LED: the description is in point 7.4

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

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

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

4.8. The 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 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.

4.10. 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.

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

4.12. 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.

4.13. 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 $6mm^2$ up to $16mm^2$ of stranded copper or Aluminum conductor PVC or XLPE insulated.

4.15. 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.

4.16. 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.

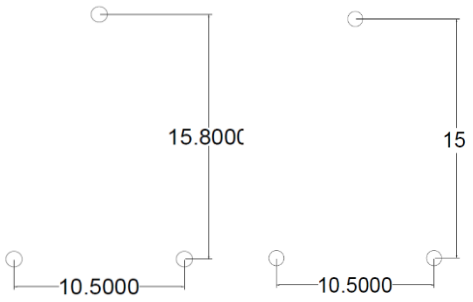
4.18.5 The terminal should withstand glow wire test at 960 ± 15 ºC and the terminal should withstand at least 135 ºC.

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 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.



4.22. Only the following supplier will be accepted in the tender offer (To be completed by the Tenderer, only the Reference List Manufacturer Are Qualified in this Tender)

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	TDK YAGEO UniOhm Murata Nippon Chemi-Con RUBYCON ST Microelectronics Microchip Maxim Microelectronics Texas Instruments Microchip ON Semiconductor JRC KDS SEIKO Atmel Renesas Micron FUJITSU Intel Qualcomm Infineon FUJITSU Elpida Rohm TSMC Samsung Ericsson Taiwan Semiconductor SK Hynix Toshiba TE CONNECTIVITY LTD Tokyo Electron Ltd. MediaTek Asml ASE Infineon Technologies Nxp ARM				
2	SMT Capacitor					
3	SMT Filter					
4	Electronics Capacitor					
5	MCU					
6	E2PROM					
7	FLASH ROM					
8	CPU					
9	POWER REGULATOR					
10	CRYSTAL OSCILLATOR					
11	Memory					
12	RAM					

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

4.23. 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**
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				

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

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
Phase		
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).

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 detailed 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.

10.8. IDECO Engineers reserve the right to test up to 10% of the tender quantity at the manufacturer premises.

10.9. IDCO will test 100% (all the tender quantity) at IDECO's Test Station. If the failure exceeds 4% of all the meters, IDECO has the right to take any or all the necessary measures including confiscating the performance bond fully or partially, the manufacturer will be blacklisted and asked for replacement for the failure meters free of charge.

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:

.3.1.2.1. Voltage ≤ 165 V disconnect immediately, and reconnect after 5 minutes if the condition release.

.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)

11.1.1. **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. This mode must be deactivated by default and the 52-weeks table should be configurable using PC software as profile and All of this dates& times can be changeable and programmable locally and remotely.

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.

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

11.1. IDECO logo
11.2. Meter Type
11.3. Manufacturer and year of manufacturing
11.4. Voltage, phase(s), wire(s).
11.5. Meter Current
11.6. Frequency
11.7. Accuracy class
11.8. Number of pulses per KWH.
11.9. The words "Property of Irbid District Electricity Co. LTD"
11.10. 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.
11.11. The plate shall carry also the contract no. (IDECO-63/2022), stock code as seen on page X and the year of manufacturing,
11.12. Defective materials under guarantee period shall be return to IDECO STORES during six months from exiting material from IDECO stores.
11.13. All packing cartoons and wooden boxes shall carry IDECO contract No. 63/2022.
11.14. Flags numbers for tampering indication as in section 7 (to be approved by IDECO).
11.15. 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. Sample meters and its Software:

11.1. 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.

11.2. 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.

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

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

11.5. 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.

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

11.7. Real time MDM presentation

13. 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.

11.1. 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.

11.2. 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.

11.3.

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

11.5. 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

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

11.7. 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).

كـــهربـــاء إربـــد
Irbid Electricity

تنبيه عام

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

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

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

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

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

- 11.11.1. Full meter communication protocols.
- 11.11.2. TCP/IP login connectionism.
- 11.11.3. Data encryption method.
- 11.11.4. Data Model.
- 11.11.5. Integration environment.

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

11.13. 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.

11.14. 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.

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

11.16. 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		

B) Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)

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 5-100 A
2.2. Rated Voltage of 230 V ± 20%
2.3. Frequency 50 Hz
2.4. Relay rated current (min 100 A)
2.5. relay short circuit current 6KA
2.6. Active Energy Class 1.
2.7. Electromagnetic Compatibility of 15kV according to IEC61000-4-2
2.8. Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC61000-4-3
2.9. Fast Transient Burst 4 kV for main circuits, 2 kV for auxiliary circuits, to IEC61000-4-5
2.10. Insulation strength of 4kVAC at 50Hz for 1 minute

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

2.12. 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.

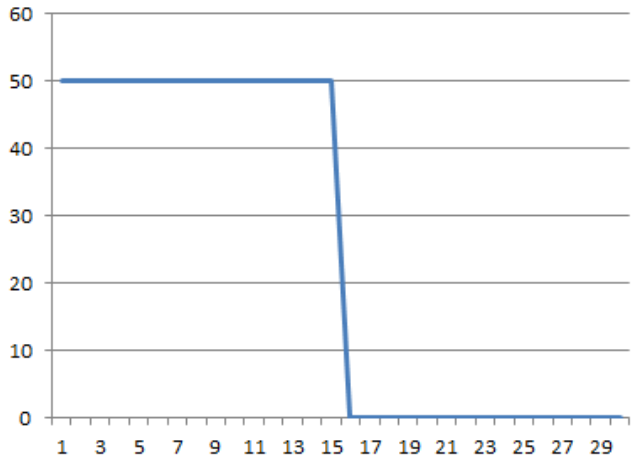
3.7. Tenders are requested to quote meter with a maximum demand, the meter shall be able to be programmed to activate the maximum demand within the specified daily period for a specific season. So the meter shall be able to be programmed so that the year will be divided into seasons (up to 12 seasons, 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. The meter must be Holley model DDSY283SR and support the modems delivered for this model previously.

4.2. The meter design must be according the following image:

4.3. 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.

4.4. 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.

4.5. The meter shall be equipped with three LED:

4.5.1. 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

4.5.2. Alarm LED: the description is in point 7.4

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

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

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

4.8. The 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 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.

4.10. 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.

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

4.12. 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.

4.13. 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 $6mm^2$ up to $16mm^2$ of stranded copper or Aluminum conductor PVC or XLPE insulated.

4.15. 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.

4.16. 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:

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

4.18.8 The terminals should have insulating properties and mechanical strength.

4.18.9 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.

4.18.10 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.

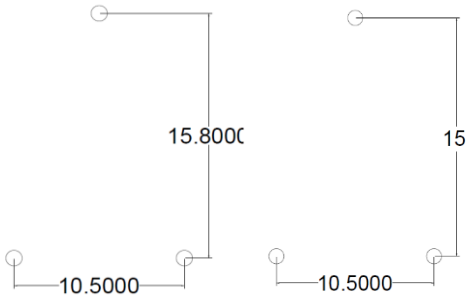
4.18.11 The terminal should withstand glow wire test at 960 ± 15 ºC and the terminal should withstand at least 135 ºC.

4.18.12 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 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.



4.22. Only the following supplier will be accepted in the tender offer (To be completed by the Tenderer, only the Reference List Manufacturer Are Qualified in this Tender)

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	TDK YAGEO UniOhm Murata Nippon Chemi-Con RUBYCON ST Microelectronics Microchip Maxim Microelectronics Texas Instruments Microchip ON Semiconductor JRC KDS SEIKO Atmel Renesas Micron FUJITSU Intel Qualcomm Infineon FUJITSU Elpida Rohm TSMC Samsung Ericsson Taiwan Semiconductor SK Hynix Toshiba TE CONNECTIVITY LTD Tokyo Electron Ltd. MediaTek Asml ASE Infineon Technologies Nxp ARM				
2	SMT Capacitor					
3	SMT Filter					
4	Electronics Capacitor					
5	MCU					
6	E2PROM					
7	FLASH ROM					
8	CPU					
9	POWER REGULATOR					
10	CRYSTAL OSCILLATOR					
11	Memory					
12	RAM					
13	BATTERY	The supplier should be a regular member At EUROBAT (SAFT is our preferred battery brand)				

4.23. 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				
20.	Optical Communication port				
21.	Relay disconnector			Test must include life time	
22.	Current Sensors				

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

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
Phase		
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).

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.

10.8. IDECO Engineers reserve the right to test up to 10% of the tender quantity at the manufacturer premises.

10.9. IDCO will test 100% (all the tender quantity) at IDECO's Test Station. If the failure exceeds 4% of all the meters, IDECO has the right to take any or all the necessary measures including confiscating the performance bond fully or partially, the manufacturer will be blacklisted and asked for replacement for the failure meters free of charge.

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. **<u>The Automatic Mode</u>** 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 ≥ 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:

.3.1.2.1. Voltage ≤ 165 V disconnect immediately, and reconnect after 5 minutes if the condition release.

.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)

11.1.2. **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. This mode must be deactivated by default and the 52-weeks table should be configurable using PC software as profile and All of this dates& times can be changeable and programmable locally and remotely.

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.

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

11.1. IDECO logo
11.2. Meter Type
11.3. Manufacturer and year of manufacturing
11.4. Voltage, phase(s), wire(s).
11.5. Meter Current
11.6. Frequency
11.7. Accuracy class
11.8. Number of pulses per KWH.
11.9. The words "Property Of Irbid District Electricity Co. LTD"
11.10. 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.
11.11. The plate shall carry also the contract no. (IDECO-63/2022), stock code as seen on page X and the year of manufacturing,
11.12. Defective materials under guarantee period shall be return to IDECO STORES during six months from exiting material from IDECO stores.
11.13. All packing cartoons and wooden boxes shall carry IDECO contract No. 63/2022.
11.14. Flags numbers for tampering indication as in section 7 (to be approved by IDECO).
11.15. 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. Sample meters and its Software:

11.1. 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.

11.2. 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.

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

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

11.5. 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.

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

11.7. Real time MDM presentation

13. 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.

11.1. 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.

11.2. 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.

11.3.

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

11.5. 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

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

11.7. 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).

كـــهربـــاء إربـــد
Irbid Electricity

تنبيه عام

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

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

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

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

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

- 11.11.1. Full meter communication protocols.
- 11.11.2. TCP/IP login connectionism.
- 11.11.3. Data encryption method.
- 11.11.4. Data Model.
- 11.11.5. Integration environment.

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

11.13. 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.

11.14. 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.

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

11.16. 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		

C) Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)

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:

27. Maximum Ambient Temperature — 75 °C
28. Minimum Ambient Temperature — -10 °C
29. Design temperature — 45 °C
30. Maximum daily range of air temperature — 20 °C
31. Maximum Wind Pressure — 420 n/m^2
32. Ice Thickness — 10 mm.
33. Snow Falls — 1-4 days – 30 cm.
34. Site altitude — 0-1400m ASL
35. Average annual rainfall — 40cm during November–April
36. Relative humidity in the range — 90%.
37. Average number of thunder storms — 15 days / year
38. Prevailing wind winter average daily approximately 5-8 m/s, with gust up to 30m/s.
39. 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 5-100 A
2.2. Rated Voltage of 230 V ± 20%
2.3. Frequency 50 Hz
2.4. Relay rated current (min 100 A)
2.5. relay short circuit current 6KA
2.6. Active Energy Class 1.
2.7. Electromagnetic Compatibility of 15kV according to IEC61000-4-2
2.8. Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC61000-4-3
2.9. Fast Transient Burst 4 kV for main circuits, 2 kV for auxiliary circuits, to IEC61000-4-5

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

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

2.12. 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.

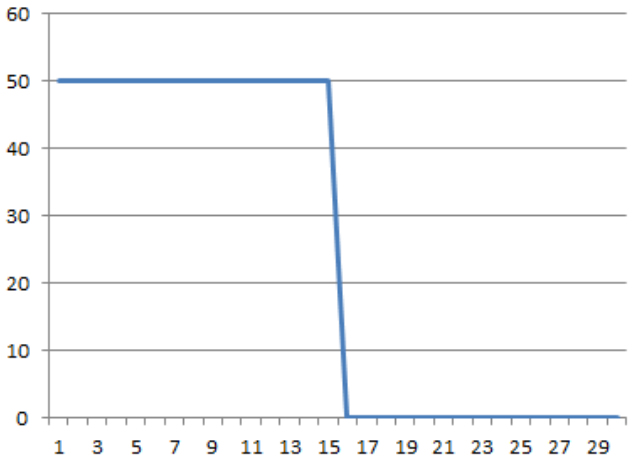
3.7. Tenders are requested to quote meter with a maximum demand, the meter shall be able to be programmed to activate the maximum demand within the specified daily period for a specific season. So the meter shall be able to be programmed so that the year will be divided into seasons (up to 12 seasons, 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. The meter must be Hexing model HXE110 and support the modems delivered for this model previously.

4.2. The meter design must be according the following image:

4.3. 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.

4.4. 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.

4.5. The meter shall be equipped with three LED:

4.5.1. 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

4.5.2. Alarm LED: the description is in point 7.4

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

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

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

4.8. The 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 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.

4.10. 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.

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

4.12. 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.

4.13. 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 $6mm^2$ up to $16mm^2$ of stranded copper or Aluminum conductor PVC or XLPE insulated.

4.15. 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.

4.16. 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:

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

4.18.14 The terminals should have insulating properties and mechanical strength.

4.18.15 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.

4.18.16 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.

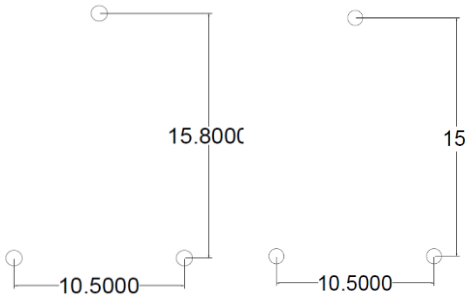
4.18.17 The terminal should withstand glow wire test at 960 ± 15 ºC and the terminal should withstand at least 135 ºC.

4.18.18 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 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.



4.22. Only the following supplier will be accepted in the tender offer (To be completed by the Tenderer, only the Reference List Manufacturer Are Qualified in this Tender)

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	TDK YAGEO UniOhm Murata Nippon Chemi-Con RUBYCON ST Microelectronics Microchip Maxim Microelectronics Texas Instruments Microchip ON Semiconductor JRC KDS SEIKO Atmel Renesas Micron FUJITSU Intel Qualcomm Infineon FUJITSU Elpida Rohm TSMC Samsung Ericsson Taiwan Semiconductor SK Hynix Toshiba TE CONNECTIVITY LTD Tokyo Electron Ltd. MediaTek Asml ASE Infineon Technologies Nxp ARM				
2	SMT Capacitor					
3	SMT Filter					
4	Electronics Capacitor					
5	MCU					
6	E2PROM					
7	FLASH ROM					
8	CPU					
9	POWER REGULATOR					
10	CRYSTAL OSCILLATOR					
11	Memory					
12	RAM					
13	BATTERY	The supplier should be a regular member At EUROBAT (SAFT is our preferred battery brand)				

4.23. 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**
23.	Main board				
24.	Power Supply Board				
25.	LCD				
26.	Push Buttons				
27.	Communication Boards and internal modem				
28.	Terminals and screw				
29.	meter cover(Case)				
30.	terminal cover				
31.	Optical Communication port				
32.	Relay disconnector			Test must include life time	
33.	Current Sensors				

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

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
Phase		
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).

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.

10.8. IDECO Engineers reserve the right to test up to 10% of the tender quantity at the manufacturer premises.

10.9. IDCO will test 100% (all the tender quantity) at IDECO's Test Station. If the failure exceeds 4% of all the meters, IDECO has the right to take any or all the necessary measures including confiscating the performance bond fully or partially, the manufacturer will be blacklisted and asked for replacement for the failure meters free of charge.

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. **<u>The Automatic Mode</u>** 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:

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

6. 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:

.3.1.2.1. Voltage ≤ 165 V disconnect immediately, and reconnect after 5 minutes if the condition release.

.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)

11.1.3. **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. This mode must be deactivated by default and the 52-weeks table should be configurable using PC software as profile and All of this dates& times can be changeable and programmable locally and remotely.

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.

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

11.1. IDECO logo
11.2. Meter Type
11.3. Manufacturer and year of manufacturing
11.4. Voltage, phase(s), wire(s).
11.5. Meter Current
11.6. Frequency
11.7. Accuracy class
11.8. Number of pulses per KWH.
11.9. The words "Property Of Irbid District Electricity Co. LTD"
11.10. 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.
11.11. The plate shall carry also the contract no. (IDECO-63/2022), stock code as seen on page X and the year of manufacturing,
11.12. Defective materials under guarantee period shall be return to IDECO STORES during six months from exiting material from IDECO stores.
11.13. All packing cartoons and wooden boxes shall carry IDECO contract No. 63/2022.
11.14. Flags numbers for tampering indication as in section 7 (to be approved by IDECO).
11.15. 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. Sample meters and its Software:

11.1. 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.

11.2. 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.

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

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

11.5. 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.

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

11.7. Real time MDM presentation

13. 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.

11.1. 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.

11.2. 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.

11.3.

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

11.5. 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

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

11.7. 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).

كـــهربـــاء إربـــد
Irbid Electricity

تنبيه عام

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

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

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

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

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

- 11.11.1. Full meter communication protocols.
- 11.11.2. TCP/IP login connectionism.
- 11.11.3. Data encryption method.
- 11.11.4. Data Model.
- 11.11.5. Integration environment.

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

11.13. 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.

11.14. 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.

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

11.16. 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		

D) Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)

Dear tenderer it will be considered that you accept and agree allrequirements unless you show comments and deviations of therequirements 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 5-100 A
2.2. Rated Voltage of 230 V ± 20%
2.3. Frequency 50 Hz
2.4. Relay rated current (min 100 A)
2.5. relay short circuit current 6KA
2.6. Active Energy Class 1.
2.7. Electromagnetic Compatibility of 15kV according to IEC61000-4-2
2.8. Electromagnetic RF Fields 80MHz-2GHz, typical 30 V/m according to IEC61000-4-3
2.9. Fast Transient Burst 4 kV for main circuits, 2 kV for auxiliary circuits, to IEC61000-4-5
2.10. Insulation strength of 4kVAC at 50Hz for 1 minute

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

2.12. 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.

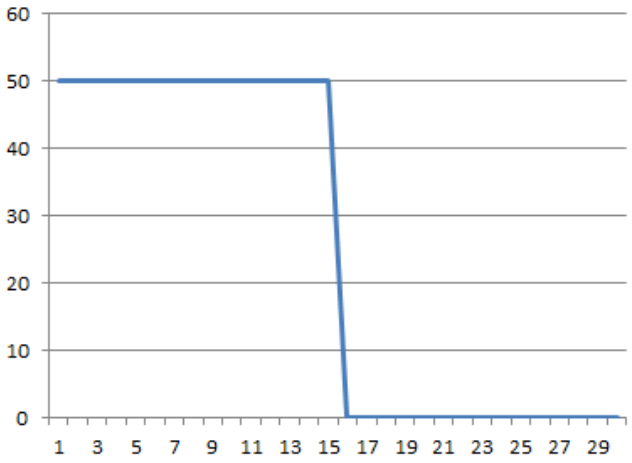
3.7. Tenders are requested to quote meter with a maximum demand, the meter shall be able to be programmed to activate the maximum demand within the specified daily period for a specific season. So the meter shall be able to be programmed so that the year will be divided into seasons (up to 12 seasons, 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. The meter must be Hexing model HXE110 and support the modems delivered for this model previously.

4.2. The meter design must be according the following image:

4.3. 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.

4.4. 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.

4.5. The meter shall be equipped with three LED:

4.5.1. 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

4.5.2. Alarm LED: the description is in point 7.4

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

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

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

4.8. The 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 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.

4.10. 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.

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

4.12. 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.

4.13. 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 $6mm^2$ up to $16mm^2$ of stranded copper or Aluminum conductor PVC or XLPE insulated.

4.15. 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.

4.16. 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:

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

4.18.20 The terminals should have insulating properties and mechanical strength.

4.18.21 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.

4.18.22 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.

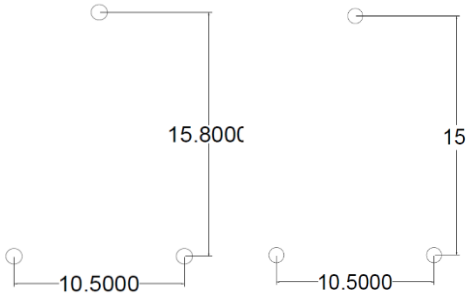
4.18.23 The terminal should withstand glow wire test at 960 ± 15 ºC and the terminal should withstand at least 135 ºC.

4.18.24 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 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.



4.22. Only the following supplier will be accepted in the tender offer (To be completed by the Tenderer, only the Reference List Manufacturer Are Qualified in this Tender)

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	TDK YAGEO UniOhm Murata Nippon Chemi-Con RUBYCON ST Microelectronics Microchip Maxim Microelectronics Texas Instruments Microchip ON Semiconductor JRC KDS SEIKO Atmel Renesas Micron FUJITSU Intel Qualcomm Infineon FUJITSU Elpida Rohm TSMC Samsung Ericsson Taiwan Semiconductor SK Hynix Toshiba TE CONNECTIVITY LTD Tokyo Electron Ltd. MediaTek Asml ASE Infineon Technologies Nxp ARM				
2	SMT Capacitor					
3	SMT Filter					
4	Electronics Capacitor					
5	MCU					
6	E2PROM					
7	FLASH ROM					
8	CPU					
9	POWER REGULATOR					
10	CRYSTAL OSCILLATOR					
11	Memory					
12	RAM					
13	BATTERY	The supplier should be a regular member At EUROBAT				

		(SAFT is our preferred battery brand)				

4.23. 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**
34.	Main board				
35.	Power Supply Board				
36.	LCD				
37.	Push Buttons				
38.	Communication Boards and internal modem				
39.	Terminals and screw				
40.	meter cover(Case)				
41.	terminal cover				
42.	Optical Communication port				
43.	Relay disconnector			Test must include life time	
44.	Current Sensors				

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

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
Phase		
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).

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.

10.8. IDECO Engineers reserve the right to test up to 10% of the tender quantity at the manufacturer premises.

10.9. IDCO will test 100% (all the tender quantity) at IDECO's Test Station. If the failure exceeds 4% of all the meters, IDECO has the right to take any or all the necessary measures including confiscating the performance bond fully or partially, the manufacturer will be blacklisted and asked for replacement for the failure meters free of charge.

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. **<u>The Automatic Mode</u>** 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:

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

8. 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:

.3.1.2.1. Voltage ≤ 165 V disconnect immediately, and reconnect after 5 minutes if the condition release.

.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)

11.1.4. **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. This mode must be deactivated by default and the 52-weeks table should be configurable using PC software as profile and All of this dates& times can be changeable and programmable locally and remotely.

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.

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

11.1. IDECO logo
11.2. Meter Type
11.3. Manufacturer and year of manufacturing
11.4. Voltage, phase(s), wire(s).
11.5. Meter Current
11.6. Frequency
11.7. Accuracy class
11.8. Number of pulses per KWH.
11.9. The words "Property Of Irbid District Electricity Co. LTD"
11.10. 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.
11.11. The plate shall carry also the contract no. (IDECO-63/2022), stock code as seen on page X and the year of manufacturing,
11.12. Defective materials under guarantee period shall be return to IDECO STORES during six months from exiting material from IDECO stores.
11.13. All packing cartoons and wooden boxes shall carry IDECO contract No. 63/2022.
11.14. Flags numbers for tampering indication as in section 7 (to be approved by IDECO).
11.15. 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. Sample meters and its Software:

11.1. 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.

11.2. 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.

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

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

11.5. 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.

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

11.7. Real time MDM presentation

13. 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.

11.1. 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.

11.2. 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.

11.3.

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

11.5. 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

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

11.7. 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).

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

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

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

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

- 11.11.1. Full meter communication protocols.
- 11.11.2. TCP/IP login connectionism.
- 11.11.3. Data encryption method.
- 11.11.4. Data Model.
- 11.11.5. Integration environment.

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

11.13. 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.

11.14. 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.

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

11.16. 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	

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 must match 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:

<table>
<tr><th rowspan="2"></th><th colspan="2">Import/Export Active Power Balanced Load</th><th colspan="2">Import/Export Active Power Unbalanced Load</th><th colspan="2">Import/Export Reactive Power Balanced Load</th><th colspan="2">Import/Export Reactive Power Unbalanced Load</th></tr>
<tr><th>Power Factor</th><th>Current</th><th>Power Factor</th><th>Current</th><th>Power Factor</th><th>Current</th><th>Power Factor</th><th>Current</th></tr>
<tr><td>1.</td><td>1.0</td><td>Imax</td><td>1.0</td><td>Imax</td><td>sinφ=1.0</td><td>Imax</td><td>sinφ=0.5L</td><td>Imax</td></tr>
<tr><td>2.</td><td>1.0</td><td>Ib</td><td>1.0</td><td>Ib</td><td>sinφ=1.0</td><td>Ib</td><td colspan="2" rowspan="14">The test points above must be done on all phases separately</td></tr>
<tr><td>3.</td><td>1.0</td><td>0.5Ib</td><td>1.0</td><td>0.5Ib</td><td>sinφ=1.0</td><td>0.5Ib</td></tr>
<tr><td>4.</td><td>1.0</td><td>0.1Ib</td><td>1.0</td><td>0.1Ib</td><td>sinφ=1.0</td><td>0.1Ib</td></tr>
<tr><td>5.</td><td>1.0</td><td>0.05Ib</td><td>0.5L</td><td>Imax</td><td>sinφ=1.0</td><td>0.05Ib</td></tr>
<tr><td>6.</td><td>0.5L</td><td>Imax</td><td>0.5L</td><td>Ib</td><td>sinφ=0.5L</td><td>Imax</td></tr>
<tr><td>7.</td><td>0.5L</td><td>Ib</td><td>0.5L</td><td>0.5Ib</td><td>sinφ=0.5L</td><td>Ib</td></tr>
<tr><td>8.</td><td>0.5L</td><td>0.5Ib</td><td>0.5L</td><td>0.2Ib</td><td>sinφ=0.5L</td><td>0.5Ib</td></tr>
<tr><td>9.</td><td>0.5L</td><td>0.2Ib</td><td colspan="2" rowspan="7">The test points above must be done on all phases separately</td><td>sinφ=0.5L</td><td>0.2Ib</td></tr>
<tr><td>10.</td><td>0.5L</td><td>0.1Ib</td><td>sinφ=0.5L</td><td>0.1Ib</td></tr>
<tr><td>11.</td><td>0.8C</td><td>Imax</td><td colspan="2" rowspan="6"></td></tr>
<tr><td>12.</td><td>0.8C</td><td>Ib</td></tr>
<tr><td>13.</td><td>0.8C</td><td>0.5Ib</td></tr>
<tr><td>14.</td><td>0.8C</td><td>0.2Ib</td></tr>
<tr><td>15.</td><td>0.8C</td><td>0.1Ib</td></tr>
</table>

SCHEDULE 5

Approval and Departures from Technical Specifications

The tenderer must the next tables for all items

1.Climate Conditions:

Item	Approved	Deviation
1		
Etc...		

2. Meter rated parameters:

Item	Approved	Deviation
1		
Etc...		

Schedule No. (6)

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	**Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)**			
2	**Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)**			
3	**Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)**			
4	**Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)**			

Price Summary

- 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 two years.

Schedule 8

No.	Quantity (PCS) Within 2 years	Material	Unit Price Currency ……..	Total Price Currency ……..
1	5,000	**Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)**		
2	5,000	**Holley Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)**		
3	2,000	**Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design I)**		
4	2,000	**Hexing Single phase, Electronic, kilowatt-hour meter, (5-100) A, 230V, 50Hz, (4 Tariffs), Class 1 KWH, (Design II)**		
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 all material before shipment and for 2 IDECO Engineers at least, and the cost shall be borne by the contractor until otherwise agreed.

Schedule No. 10

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.	

Main Offer Details

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

Schedule No.11

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

Tender Agreement Summary
Tender No. (20/2023)

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 / / 2023.

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

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

Address.....…….Occupation…….....