Tender Document
LUMS

Last Date for submission of bids	**09/10/2023 till 11:00am**
Opening of bids	**09/10/2023 at 11:30am**

Lahore University of Management Sciences (hereinafter called LUMS) invites sealed bids for the supplies as per attached BOQ on Single stage two envelope basis.

If you have doubt as to the meaning of any portion of the specification or other terms and conditions, you may seek clarification of the same in writing from us.

You are required to submit your bid, which will bear words "CONFIDENTIAL" and

LUMS does not take any responsibility for collecting the bids from any agency. The requests for an extension of closing date and time shall not be entertained.

Specifications

1.   Equipment Name: **Smart Energy Meters**

Total Quantity Required# 60

Specifications

Hardware:

Smart Meter Specifications: Smart meters should offer a comprehensive solution for monitoring and managing electrical parameters across a wide range of applications. Their compatibility should be with 1-volt split core CTs, multiple current sensing options, extensive measurement capabilities, data granularity, long-term data storage, and built-in Wi-Fi connectivity.

Compatibility with 1 Volt CT: These smart meters should design to seamlessly integrate with 1-volt CTs, ensuring precise current measurements across various applications.

Multiple Output Current Sensing Ampere Ratings: The meter should support multiple output current sensing ampere ratings, making them versatile and adaptable to a wide range of current measurement requirements. They should be capable of accurately measuring both AC and DC currents.

Comprehensive Measurement Capabilities: These smart meters should offer an extensive range of measurement capabilities, that should include:

- **Current:** Accurate measurement of both AC and DC currents.
- **Voltage:** Precise measurement of both AC and DC voltages.
- **Power:** Measurement of both active and reactive power for both AC and DC circuits.
- **Power Factor:** Calculation and reporting of power factor, a critical parameter for assessing the efficiency of electrical systems.
- **Usage Monitoring:** Tracking and reporting of energy consumption, enabling users to monitor their power usage effectively.
- **Generation Monitoring:** Monitoring of power generation, useful for renewable energy systems and distributed generation.
- **Surge Impedances:** Assessment of surge impedance for starting current and should provide protection against voltage surges and transient events.

Granularity and Data Storage: These meters should provide data granularity at a second-by-second level, ensuring high-resolution data collection. They also offer substantial data storage capabilities, allowing them to retain historical data for up to two years within the device itself. This extended data storage capacity ensures that users have access to valuable historical information for analysis and decision-making.

Data Transmission: The smart meters should be equipped with built-in Wi-Fi connectivity, enabling them to seamlessly connect to local internet networks. They can efficiently transmit the collected data to designated in-house MQTT servers, ensuring real-time data access and remote monitoring. This feature facilitates remote management and analysis of energy usage and system performance.

The vendor should provide the training of the equipment.

Software Requirement

Designing the architecture of an energy consumption and generation monitoring software system with any number of generation sources and hierarchical loads being monitored by smart metering devices. The software should be completely documented with the ability for the admin to make changes through a user interface.

The backend should be developed with the user interface based on the web-based platform.

The software should support an unlimited number of signups and logins given the storage available to the system.

The system should incorporate state-of-the-art cybersecurity practices including prevention from DDoS and other attacks.

The system should be tested at a peak load of 10,000 concurrent connections without failure in providing <1s response from the server to the clients.

The software should include a module for real-time numbers displayed of all meters of a site in tabular and graphical forms i.e., pie and bar charts. Another module for all the historical data to be visualized and downloaded on the client end. A third module for comparison of loads through multiple days on user selection. The last module should give an overview to the user of their consumption and generation patterns.

The user interface should incorporate the selection of all standard bootstrap themes with all elements in the application compliant with the theme and allow the user to change the themes of their interface in real-time.

The backend should support integration with any type of smart metering device that reports data at regular intervals. The system should standardize data from all meters to a consistent format for the users.

The system will preserve all data collected from the start of the deployment without any loss of data from the software end from there on.

The bidder will provide training to the admin for running the system and making any changes to the backend.

2.   Equipment Name: **Current Transformer (CT)**

Total Quantity Required# 500

Specifications

Core Type: The CT must be of the split-core variety, allowing for easy installation and retrofitting without disconnecting the primary conductor. This design ensures practicality and convenience during setup and maintenance.

Output Rating: The CT should provide an output rating of 100A/1V, allowing for a precise transformation of current measurements into a more manageable voltage level. This feature facilitates accurate monitoring and data acquisition.

Accuracy: The CT should exhibit a high degree of accuracy with a class rating of 0.5. This level of precision ensures that the measurements taken by the CT are highly reliable, making it suitable for applications where data accuracy is critical.

Burden Capacity: The CT should have a burden capacity of 16D, indicating its ability to handle substantial loads without compromising measurement accuracy. This feature is essential for maintaining consistent performance under varying conditions.

Frequency Compatibility: The CT should be versatile enough to operate at both 50 Hz and 60 Hz frequencies, making it adaptable to a wide range of electrical systems and

applications. This flexibility ensures its compatibility with different power grids and equipment.

Temperature Range: The CT should be capable of functioning effectively within a temperature range spanning from -40 to 70°C. This wide operating temperature range allows for reliable operation in diverse environmental conditions, including extreme temperatures.

Coil Ratio: The coil ratio of the CT should be 1000:1, indicating the transformation ratio between the primary and secondary windings. This ratio ensures that the CT can accurately scale down high currents to a manageable level for measurement and monitoring purposes.

3. Equipment Name: **Weather Station**

Total Quantity Required# 4

Specifications

Temperature Monitor: This sensor should be engineered to deliver precise temperature readings with an impressive accuracy of +/- 0.2 degrees Celsius with an outdoor range of -40 to 158°F (-40 to 70°C) and an indoor range of 32 to 122°F (0 to 50°C) of Whether, it ensures you have trustworthy data for your weather observations.

Hygrometer: The sensor should be in the range of +/- 5% (0-10% RH), +/- 4% (10-20% RH), +/- 3% (20-80% RH), +/- 4% (80-90% RH), +/- 5% (90-100% RH) with humidity range of 1% to 99% RH. The hygrometer, a vital component of the weather station, should excel in measuring humidity levels.

Anemometer and Wind Vane: The 16-point wind direction sensors should work in tandem to provide detailed wind data. The anemometer must accurately gauge wind speed, while the wind vane precisely determines wind direction.

Barometer: The barometer should be within the weather station and must be a highly reliable instrument, capable of recording atmospheric pressure within the range of 28.5 to 31.5 inches Hg. Its accuracy should be of +/- 0.16 inHg making it an invaluable tool for monitoring and predicting weather changes, especially for storm forecasting.

Rain Gauge: It should measure 0.01 inches (0.25 mm) and up with an accuracy of +/- 0.05" per inch of rainfall. It should provide accurate data on precipitation, helping you track rainfall amounts precisely.

UV & Solar Radiation Sensor: This sensor should detect and report levels of ultraviolet (UV) and solar radiation. It can measure the intensity of UV radiation in the UV-A (320-400 nm) and UV-B (280-320 nm) spectrums, providing crucial insights into solar exposure and its implications for skin safety.

Moreover, the sensor utilizes specialized photovoltaic cells to capture solar radiation data and should offer precise measurements of solar irradiance in watts per square meter

(W/m²). This data is invaluable for various applications, including solar energy system optimization, weather forecasting, and environmental monitoring.

Lightning Detector: The lightning detector must have a range of 1 to 25 miles (1.6 to 40 kilometers) with a temperature range of -40 to 158°F (-40 to 70°C). It can detect lightning strikes within a specified range, aiding in the issuance of timely warnings for thunderstorms and electrical storm events.

Air Quality Index Sensor: This multifaceted sensor should measure various air quality parameters, including carbon monoxide (CO), nitrogen oxide (NO), carbon dioxide (CO_2), ozone (O_3), fine particulate matter (PM2.5), coarse particulate matter (PM10), nitrogen dioxide (NO_2), ammonia (NH_3), and sulfur dioxide (SO_2). It should provide essential insights into air quality, contributing to health and environmental assessments.

Power: 4 AA alkaline or lithium batteries (lithium recommended below -4°F / -20°C).

Internet: It should connect with ethernet and Wi-Fi and can send and store data with high granularity.

TERMS AND CONDITIONS

1. Instruction to Bidders:
   a) **General:** Bids are invited through <u>Sealed Envelope</u> for the purchase of supplies and other related items from the authorized distributors and manufacturers on delivery Ex-LUMS.
   b) **Bill of quantities:** The bidder may quote for one or more items showing description and specification of offered items.
   c) **The vendor is required to quote in PKR Currency and the delivery location is LUMS.**

2. Date &Time of Submission of Tenders:
The interested bidders may submit their bids on the prescribed form, available on written request on the firm / company letter pad from the Procurement office located, Lahore University of Management Sciences, at Opposite Sector U, DHA Lahore along with a postal order/pay order/bank draft / amounting to Rs. 1,500/- (Non-refundable) drawn in favor of Lahore University Of Management Sciences.
All bids must be delivered in procurement office on or before the prescribed deadline of 11:00 am on the date already mentioned above.
 Any Bid received by LUMS after the prescribed deadline for submission of bids will be returned unopened to the Bidder.
3. Sealing and Marking of Bids:
The bids shall comprise in a Single package containing two separate envelopes each envelope shall contain separately, duly sealed, the "<u>Financial Proposals</u>" and "<u>Technical Proposals</u>". The envelopes shall be marked as "<u>Financial Proposals</u>" and "<u>Technical Proposals</u>" in bold and legible letters to avoid any confusion.
The envelop will be addressed to;

Manager Procurement
Lahore University of Management Sciences,
Opposite Sector U, DHA,
Lahore
TEL: (042)35608251

The envelopes shall also bear the word "CONFIDENTIAL" and following identifications: -
If the envelope is not marked, as instructed above, LUMS will assume no responsibility for the misplacement or premature opening of the bid.

4. Bid Opening:
LUMS will open the bids, in the presence of Bidder's representatives who choose to attend at 11:00 am on the date already mentioned above, in the Procurement office.

5. Evaluation:
   a) After opening of bids, LUMS will examine the bids for technical evaluation and completeness of the bids as per tender document.
   b) The bids shall be evaluated on the basis of "<u>Technical proposals</u>" and "<u>Financial Proposals</u>" as under:

      (i)   The envelope for "<u>Technical Proposals</u>" will be opened initially in the presence of the bidders.
      (ii) The envelope for "<u>Financial Proposals</u>" will be retained unopened.
      (iii) The "<u>Financial Proposals</u>" envelope of technical responsive bidders will be opened in front of technically qualified bidders after the technical evaluation. The "<u>Financial Proposals</u>" envelope of technically non-qualified bidders will be returned unopened to the bidder.
   c) Bidder(s) who do (es) not qualify cannot challenge the findings of the evaluation or ask for reasons of disqualification.

6. Earnest Money:
The bidder must enclose 2% of the total quoted amount as earnest money in shape of pay order/bank draft in favor of Lahore University of Management Sciences. The tenders without earnest money or containing less earnest money will not be accepted. Earnest money of the successful bidder will be refunded after the delivery of the goods.

7. Change in Quantities:
LUMS reserves the right to increase/decrease quantities and it will be the responsibility of the supplier/contractor to deliver the item on time and change defective items.

8. Mode of Payment:
   a) Payment terms will be credit basis.

b) In case of advance payment first class bank guarantee or mutually accepted collateral will be provided by the bidder.

9. NTN/GST Certificate:

Bidder must mention their National Tax Number (NTN) and General Sales Tax (GST) number (if sales tax registered) and furnish a copy of NTN and GST certificate along with tender.

10. Tax Deduction:

Income Tax as per government tax rules will be deducted from the total amount unless an exemption certificate is provided from the income tax department.

11. Specification Criteria:

All bids must be submitted according to specification given in the BOQ.

12. Delivery Time:

a) Validity period of the tender will be mutually decided from the date of placement of order. During this period successful bidders will be bound to supply the items on the rates they quoted.

b) In case the supplier fails to supply the agreed material in time, LUMS reserves the right to reject its offer and confiscate the earnest money deposited.

c) Delivery will be on Ex-LUMS

d) Pre-shipment inspection will be done by LUMS if required.

13. Inspection and Testing

a) LUMS representative shall have the right to inspect and / or test the Goods to confirm their conformity to the Purchase order(s) Specifications.

b) Should any inspected or tested goods fail to conform to the specifications, LUMS may reject them and the supplier shall either replace the rejected goods or make all alterations necessary to meet specification of LUMS. All costs incurred on such replacements / alterations shall be entirely borne by the supplier, failing to do so, the purchase order(s) will be cancelled and all retained values will be forfeited in favor of LUMS.

14. Quality of items:

All item(s) supplied by successful bidder should be wholesome and include all the basic accessories. The additional accessories may be included separately. The offered items(s) should not be of substandard nature.

15. Warranty:

As mentioned against each item or for the given period starting from the date of supply.

16. Penalty:

For failure to comply with delivery schedule of Purchase Order(s) penalty will be imposed on defaulting bidder as under:

a)   1% of the cost of entire order or of such items/job as remains un-supplied/not-completed for every day up to maximum of 5% for 10 days exceeding the delivery period unless mutually agreed in writing.

b)   If the material is not supplied even after payment of penalty for 10 consecutive days LUMS reserves the right to cancel the purchase order and to obtain the required items/get the job done from elsewhere at risk and cost of the defaulting contractor. In this scenario the Earnest money will be confiscated.

17. Grievance Committee

Supplier can contact the grievance committee of LUMS if required.

18. Rejection of Bids:

LUMS reserves the right to reject any or all bids or proposals without assigning any reason.

19. Other Instructions:

a)   Bid Prices shall be quoted on Annexure-"A" and also on letter Head duly filled in, stamped and signed by the authorized representative of Bidder.

b)   Bidding Form Annexure-"B" must also be duly filled in, stamped and signed by authorized representative of Bidder.

c)   Quoted price shall be valid for three months from the opening date of the Tender, for placing order however, any subsequent change in taxes and duties as notified by government will be given due consideration.

I/We hereby agree to abide by and fulfill all the terms and conditions of the contract.

The sum of Rs._____ is herewith forwarded in the shape of _____as

2% earnest money.

Name and Address of the Firm   **Company's Stamp**

_____

_____

_____

Name and Signature of company's Representative

_____

_____

CNIC: _____

ANNEXURE "A"
FINANCIAL PROPOSALS

S. No.*	Name of Item	Qty	Ex-LUMS	Total Price	Remarks

* S.NO as mentioned on BOQ

Authorized Signature of Bidder with seal

stamp_____

Full name of firm _____

N.I.C. No. _____

Phone no. _____ Mobile No._____

ANNEXURE-"B"

TECHNICAL PROPOSALS

S. No.*	Name of Item(s)	Specifications / Brand	Qty

* S.NO as mentioned on BOQ

Authorized Signature of bidder with seal stamp

_____

Full name of firm _____

N.I.C. No. _____

Phone no. _____ Mobile No._____

Note: Attach technical brochure producing detailed specifications for all the offered items(s).

BIDDING FORM

Date: _____

Lahore University of Management Sciences.
Lahore

Gentleman

1. Having examined the conditions to Tender and Specifications of Tender No <u>LUMS/213/2023 DATED: 17.09.2023</u>, the receipt of which is hereby acknowledged. We the undersigned, offer to supply and deliver in conformity with specifications mentioned in BOQ and conditions of Tender for the sum of Rs._____ (Rupees _____) or such other sums as may be ascertained in accordance with the said Conditions.

2. If our Bid is accepted, we shall deliver the required supplies mentioned in the tender documents within _____ days from the date of receipt of your firm Purchase Order.

3. We agree to abide by the terms and conditions of the Tender for the period of _____ from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

4. Until a formal Purchase order(s) is placed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.

5. We understand that you are not bound to accept the lowest or any proposal you may receive or to inform us of the rejection of our bid or to give any reasons thereof.

Dated this _____ day of _____ 2023.

Signature _____ in the capacity of _____ duly authorized to sign Tender for and on behalf of

_____
(NAME OF FIRM IN BLOCK CAPITALS)

Complete Address: _____

Fax No._____ Telephone No._____

(SIGNATURE)
Witness :-1.   _____   2_____