

Malaviya National Institute of Technology Jaipur

Jawahar Lal Nehru Marg, JAIPUR-302017 (Rajasthan)

**Ministry of Education
(Government of India)**



Single Tender Enquiry

For

Procurement of Libelum IoT Kit

NIT Number: F5(1455)ST/MNIT/CSE/20232

Date:31.03.2022

**MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY
JLN MARG, JAIPUR-302017**

To,

M/s INTRINSIC Solutions

Or (it's authorized dealer/distributor)

M/s

.....

.....

Email id:

Sub: Invitation for Quote for the Purchase "Libelum IoT Kit".

Registrar, Malaviya National Institute of Technology Jaipur invites Quote from M/s INTRINSIC Solutions .The hard copy of your offer addressed to the Office of Deputy Registrar (Stores & Purchase) MNIT, JLN Marg, Jaipur- 302017 is required to be submitted on or before Dated 24.04.2023. The important information related to tender are as follows:

Sr. No.	Item Description	Specifications
1	LibelumIoT Kit	As per Annexure-E

1. The bids should contain the following document:

- i. Detailed technical product catalogue.
- ii. Bidder should be the manufacturer / authorized dealer. In case bidder submitted the bid on behalf of OEM than Letter of Authorization from original equipment manufacturer (OEM) specific to the tender enquiry should be enclosed (as per Annexure A).
- iii. A certificate from OEM to the affect that the said good/software is a proprietary item
- iv. A certificate to the affect that the price quoted by you is the lowest and not more than the price quoted to other Educational Institutes in India.
- v. A certificate to the affect that your firm has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.
- vi. List of industrial and educational establishments where the items enquired have been supplied must be provided.
- vii. Previous Purchase Order's.

2. Validity: The validity of the offer shall remain valid for 90 days from the date of submission of the offer.

3. Award of Contract MNIT, Jaipur shall award the contract to the bidder whose bid has been accepted and determined as responsive.

4. Installation: The supplier is required to do the installation and demonstration of the equipment / software within two weeks of the arrival of materials at the MNIT Jaipur, site of installation.

5. Payment Terms: For Indigenous supplies, 100% payment shall be made by the Purchaser against delivery,

inspection, successful installation, commissioning and acceptance of the equipment at MNIT Jaipur in good condition and to the entire satisfaction of the Purchaser.

- i. GST Deduction at source as per Order/ notification of the Govt.
 - ii. GST No of MNIT Jaipur is **08AAAJM0351L1Z6**
 - iii. HSN/SAC No of the items must be clearly mentioned in the quotation along with GST No.
 - iv. MNIT Jaipur is exempted from paying custom duty under notification No.51/96 (partially or full) and necessary "Custom Duty Exemption Certificate" can be issued after providing following information and Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute, no certificate will be issued to third party:
6. **Defective Equipment:** If any of the equipment supplied by the Supplier is found to be substandard, refurbished, un-merchantable or not in accordance with the description/specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Supplier with 18% interest if such payments for such equipment have already been made. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 7 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges. In case supplier fails to replace above item as per above terms & conditions, MNIT Jaipur may consider "Banning" the supplier.
 7. **Liquidated Damages (L.D):** If a supplier fails to execute the order in time as per the terms and conditions stipulated therein, it will be open to the purchaser to recover liquidated damages for delay in delivery and installation from the supplier at the rate 0.5% of the value of the order per week subject to a maximum of 10% of the total order value. The L.D charges can be increased in case of gross violation of the Purchase Order terms as decided by the Director of the Institute.
 8. **Cancellation:** MNIT Jaipur reserves the right to accept or reject or cancel any or all enquiries or quotations at any stage without assigning any reason thereof.
 9. The bid submission of last Date & Time-**24th April, 2023 by 02.00 PM**
 10. All disputes are subject to Jaipur jurisdiction.
 11. Must ensure to submit Declaration of Local Content. (Annexure-B)
 12. Must ensure the price bid/financial bid be furnished as per the price bid format (Annexure-C)
 13. Must ensure to submit duly signed checklist (as per Annexure- D)

Deputy Registrar (S&P)

MANUFACTURERS' AUTHORIZATION FORM

[The Tenderer shall require the Manufacturer to fill in this Form in accordance with the Instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer].

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

To: [insert complete name and address of Purchaser] WHEREAS

We [insert complete name of Manufacturer], who are official manufacturers of [insert type of goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Tenderer] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the Terms and Conditions, with respect to the Goods offered by the above firm.

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

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer] Title: [insert title]

Duly authorized to sign this Authorization on behalf of: [insert complete name of Tenderer] Dated on day of,

[insert date of signing]

DECLARATION OF LOCAL CONTENT

[For Local Content of Products, Services or Works]

(To be given on Company Letter Head – For tender value below Rs.10 Crores)

(To be given by Statutory Auditor/Cost Auditor/Cost Accountant/CA for tender value above Rs.10 Crores)

To,
The Registrar
MNIT Jaipur

Subject: Declaration of Local Content

Tender reference No. _____

1. Country of Origin of Goods being offered: _____
2. With reference to Order No. P- 45021/2/2017-PP(BE-II) dated 16-09-2020 of DPIIT, Ministry of Commerce and Industry, Govt. of India, we fall under the following category of supplier (please tick the correct category) for the items for which this tender has been floated and being bided.
 - Class I local supplier – has local content equal to more than 50%. Local contents added at _____ (name of location).
 - Class II local supplier – has local content more than 20% but less than 50%. Local contents added at _____ (name of location).
 - Non-local supplier – has local content less than or equal to 20%. Local contents added at _____ (name of location).
3. We are solely responsible for the above mentioned declaration in respect of category of supplier. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which we may be debarred for up to 2 years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

FORMAT FOR PRICE BID SUBMISSION

(In letterhead of the supplier with seal)

1	2	3		4	5			6	7				8
Sl. No.	Name of Goods	Part Item Sl. No.	Name of Part-Item	Accounting unit & quantity	Price per unit (Rs.)			Total Item price	Delivery Charges (Rs.)				Total Bid Price (Rs.)
					Ex-factory/ ex-warehouse/ ex-show room off-the shelf	GST payable	Overall Basic unit price (Col. a+b)		Packing and forwarding	Transit Insurance, Other duties and taxes, if any (other than sales tax) and incidental costs	Any other charges (please specify)	Total Inland Transportation	
1	2	3		4	5(a)	5(b)	5(c) = 5(a)+5(b)	6 = 4x 5(c)	7(a)	7(b)	7(c)	7= 7(a)+7(b)+7(c)	(6)+(7)
1	LibelumIoT Kit												
GRAND TOTAL													

Total bid price (for Indian components) in Indian Currency*: (in figures) :

(in words):

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR

The bidders submitting quotations for the supply of items must ensure to fill the checklist as mentioned below:

S.No.	Document/Details sought for	Page No.	Yes	No
1	Detailed technical product catalogue.			
2	Bidder must be manufacturer/authorized distributor/dealers and they have to enclose a certificate of authorization of manufacturer in format at Annexure –A, (Authorization certificate in any other format will not be valid) OEM itself or any one authorized dealer on behalf of OEM a may participate in bid. OEM and its dealers both may not participate at the same time.			
3	A certificate from OEM to the effect that the said good /software is a proprietary item			
4	A certificate to the affect that the price quoted by you is the lowest and not more than the price quoted to other Educational Institutes in India.			
5	A certificate to the affect that your firm has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency / Govt. Department / Public Sector Undertaking in the last three years.			
6	List of industrial and educational establishments where the items enquired have been supplied must be provided.			
7	Previous Purchase Order's.			
8	Declaration of Local Content			

Any other important point requested in the bid invitation letter

Libelium IoT Kits Specifications

#	IOT Kit
1	Battery powered indoor IEEE 802.15.4 node 4 USB Gateway 802.15.4 5dBi 1 GPS Module 1 4G Module 1 Bluetooth Module PRO 5 dBi 1 RS-485 / Modbus module + DB9 cable 1 WiFi module SMA5 1 Events Board 1 Smart Cities sensor board PRO 1 Agriculture Sensor Board PRO 1 Smart Water sensor board 1 4-20 mA (Current Loop) 1 Expansion Radio Board Module 1 Temperature, humidity and pressure sensor 2 Presence sensor (PIR) 1 Luminosity (Luxes accuracy) sensor 1 Oxygen (O2) [Calibrated] 1 Ultrasound sensor (indoor) 1 Soil/Water Temperature (Pt-1000) Sensor 1 Soil moisture sensor 1.5m 1 Solar radiation SQ-100x Sensor 1 Weather Station WS-3000 (anemometer + wind vane + pluviometer) 1 Conductivity sensor probe 1 PH sensor probe 1 Rigid Solar Panel 7V – 500mA 2 6600 mAh rechargeable battery 4 MicroSD 16GB card pack (5 units) 1 Conductivity calibration kit, K=1 1 pH calibration kit 1 220 to USB 2 Outdoor IEEE 802.15.4 WiFi 4G cloud gateway 1

Battery powered indoor IEEE 802.15.4 node

- Microcontroller: ATmega1281
- Frequency: 14.7456 MHz
- SRAM: 8 kB
- EEPROM: 4 kB
- FLASH: 128 kB
- SD card: 16 GB
- Weight: 20 g
- Dimensions: 73.5 x 51 x 13 mm
- Temperature range: [-30 °C, +70 °C]*
- Clock: RTC (32 kHz)
- Inputs/Outputs: 7 analog (I), 8 digital (I/O), 1 PWM, 2 UART, 1 I2C, 1 USB, 1 SPI
- Battery voltage: 3.3 – 4.2 V
- USB charging: 5 V – 480 mA (max current input)
- Solar panel charging: 6 - 12 V – 300 mA (max current input)
- Built-in sensors on the board: Accelerometer: $\pm 2g/\pm 4g/\pm 8g$

Wireless Specifications

- Radio version : XBee 3 802.15.4
- Protocol : 802.15.4
- Frequency bands : 2.4 GHz
- Transmission power : 19 dBm
- Sensitivity : -100 dBm
- Range* : 3200m

Indoor USB 802.15.4 Gateway specifications

Powered via USB type A

External Antenna : Yes

LED : Yes

GPS Module specifications

External antenna : Yes

Powered by : sensor node

Pins for mounting : Yes

4G Module Specifications

Supported bands

- B17 (700)
- B5 (850)
- B4 (1700)
- B2 (1900)

3G fall-back : Yes

Supported 3G bands

- B5 (850)
- B2 (1900)

2G fall-back : Yes

Supported 2G bands

- GSM 850
- PCS 1900

GPS/GLONASS : Yes

Certifications

- FCC, IC,
- PTCRB, AT&T

Bluetooth module for device discovery PRO 5 dBi specifications

Bluetooth v2.1 + EDR. Class 2.

TX Power: 3 dBm

Antenna: 2 or 5 dBi

Up to 250 unique devices in each inquiry

Received Strength Signal Indicator (RSSI) for each scanned device

Class of Device (CoD) for each scanned device

7 Power levels [-27 dBm, 3 dBm]

Scan devices with maximum inquiry time

Scan devices with maximum number of nodes

Scan devices looking for a certain user by MAC address

Classification between pedestrians and vehicles

RS-485 Serial / Modbus Module specifications

Electrical features

Board power voltages: 3.3 V

Maximum admitted voltage: -0.3 V to +4 V

Max data rate: 2.5 Mbps

Temperature range: [-40 °C, 85 °C]

Dimensions: 33 x 31.5 mm

WiFi SMA5 Module

Wireless Specifications

TX power:

- 802.11b: 17 dBm
- 802.11g: 14 dBm
- 802.11n: 12 dBm

RX sensitivity:

- 802.11b @11Mbps PER<8%: -87 dBm
- 802.11b @1Mbps PER<8%: -94 dBm IMAGEN
- 802.11g @54Mbps PER<10%: -73 dBm
- 802.11g @6Mbps PER<10%: -86 dBm
- 802.11n MCS0 PER<10%: -86 dBm
- 802.11n MCS0 PER<10%: -70 dBm

Chipset consumption:

- TX mode: 350 mA
- RX mode: 130 mA

Internet protocols: ARP, ICMP, IP, UDP, TCP, DHCP, DNS, NTP, HTTP, FTP

Security protocols: SSL3/TLS1, HTTPS, RSA, AES-128/256, 3DES, RC-4, SHA-1, MD-5, WEP,

WPA and WPA2 Accelerated in HW: AES, 3DEC and SHA

Wireless Specifications:

- Standards: IEEE 802.11b/g/n
- Frequency:

- Europe: 2.412 – 2.472 GHz
- USA: 2.412 – 2.462 GHz
- Japan: 2.412 – 2.484 GHz
- Channels: 1 to 11

Event sensor board

Signal conditioning board that can support sensors like Temperature, Humidity and Pressure, Presence (PIR), Horizontal liquid level (combustibles) / (water), Vertical liquid level (water), Nitric Oxide – NO, Nitric Dioxide – NO₂, Sulfur Dioxide – SO₂, Ammonia – NH₃, Methane – CH₄ – and other combustible gases, Water presence (point/line), Hall effect, Water flow medium, Luminosity (Luxes accuracy)

Smart Cities sensor board PRO

Signal conditioning board that can support sensors like Temperature + Humidity + Pressure, Carbon Monoxide – CO, Carbon Dioxide – CO₂, Molecular Oxygen – O₂, Ozone – O₃, Nitric Oxide – NO, Nitric Dioxide – NO₂, Sulfur Dioxide – SO₂, Ammonia – NH₃, Methane – CH₄ – and other combustible gases, Hydrogen Sulfide – H₂S, Luminosity (Luxes accuracy)

Agriculture Sensor Board PRO

Signal conditioning board that can support sensors like Temperature, Humidity and Pressure, Anemometer + wind vane + pluviometer, Soil moisture* (1.5, 4.5, 8 m), Leaf wetness, Luminosity (Luxes accuracy), Ultrasound (outdoor IP67), Soil/Water temperature, Solar radiation (PAR) SQ-100x, Trunk diameter, Stem diameter, Fruit diameter sensors

Smart Water sensor board

Signal conditioning board that can support sensors like Soil / Water temperature, Conductivity, Dissolved Oxygen, pH, Oxidation Reduction Potential

4-20 mA (Current Loop)

Signal conditioning board that can support integration of sensors with 4-20mA standard output

Expansion Radio Board Module

A module that can enable the user to integrate secondary wired/wireless connectivity

Temperature, Humidity and Pressure sensor Specifications

Electrical characteristics

- Supply voltage: 3.3 V
- Sleep current typical: 0.1 μ A
- Sleep current maximum: 0.3 μ A

Temperature sensor

- Operational range: -40 ~ +85 °C
- Full accuracy range: 0 ~ +65 °C
- Accuracy: ± 1 °C (range 0 °C ~ +65 °C)
- Response time: 1.65 seconds (63% response from +30 to +125 °C)
- Typical consumption: 1 μ A measuring

Humidity sensor

- Measurement range: 0 ~ 100% of Relative Humidity (for temperatures < 0 °C and > 60 °C see figure below)

- Accuracy: $< \pm 3\%$ RH (at 25 °C, range 20 ~ 80%)
- Hysteresis: $\pm 1\%$ RH
- Operating temperature: -40 ~ +85 °C
- Response time (63% of step 90% to 0% or 0% to 90%): 1 second
- Typical consumption: 1.8 μ A measuring
- Maximum consumption: 2.8 μ A measuring

Pressure sensor

- Measurement range: 30 ~ 110 kPa
- Operational temperature range: -40 ~ +85 °C
- Full accuracy temperature range: 0 ~ +65 °C
- Absolute accuracy: ± 0.1 kPa (0 ~ 65 °C)
- Typical consumption: 2.8 μ A measuring
- Maximum consumption: 4.2 μ A measuring

Presence sensor (PIR) Specifications

Height: 25.4 mm

Width: 24.3 mm

Length: 28.0 mm

Consumption: 100 μ A

Range of detection: 6 ~ 7 m

Spectral range: ~ 10 μ m

Luminosity (Luxes accuracy) sensor Specifications

Electrical characteristics

Dynamic range: 0.1 to 40000 lux

Spectral range: 300 ~ 1100 nm

Voltage range: 2.7 ~ 3.6 V

Supply current typical: 0.24 mA

Sleep current maximum: 0.3 μ A

Operating temperature: -30 ~ +70 °C

Oxygen (O2) [Calibrated] Specifications

Sensor: LFO2-A4

Performance Characteristics

- Long Term Output Drift: $< 1\%$ signal/3 months
- Response Time (T90): ≤ 17 seconds
- Sensitivity: 80-130 μ A @ 20.9% O2
- Accuracy: as good as $\pm 0.1\%$ (ideal conditions)

Operation Conditions

- Temperature Range: -30 °C to 50 °C
- Operating Humidity: 5 to 95% RH non-condensing
- Pressure Range: 80 to 120 kPa
- Storage Temperature: 3 °C to 20 °C, 6 months

Expected Operating Life: 2 years until 85% original output of 20.9% O2

Ultrasound sensor (indoor) specifications

Operation frequency: 42 kHz

Maximum detection distance: 645 cm

Sensitivity (analog output): 2.5 mV/cm (powered at 3.3 V) -- 3.8 mV/cm (powered at 5 V)

Power supply: 3.3 ~ 5 V

Consumption (average): 2 mA (powered at 3.3 V) -- 3 mA (powered at 5 V)

Usage: Indoors

Soil / Water temperature sensor Specifications

Measurement range: 0 ~ 100 °C

Accuracy: DIN EN 60751

Resistance (0 °C): 1000 Ω

Diameter: 6 mm

Length: 40 mm

Cable length: ~500 cm

Soil moisture sensor Specifications

Measurement range: 0 ~ 200 cb

Frequency Range: 50 ~ 10000 Hz approximately

Diameter: 22 mm

Length: 76 mm

Terminals: AWG 20

Solar radiation (PAR) SQ-100x sensor Specifications

Operation temperature: -40 ~ 60 °C

Operation humidity: 0 ~ 100% RH

Sensitivity: 0.1 mV / $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$

Calibration factor (reciprocal of sensitivity): 10 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ / mV

Non-linearity: < 1% (up to 4000 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ / mV)

Non-stability (long-term drift): <2% per year

Spectral range: 370 ~ 650 nm

Repeatability: <0.5%

Diameter: 2.4 cm

Height: 3.3 cm

Cable length: 5 m

Weather Station WS-3000 (anemometer + wind vane + pluviometer)

Anemometer Specifications

Sensitivity: 2.4km/h / turn

Wind Speed Range: 0 ~ 240km/h

Height: 7.1 cm

Arm length: 8.9 cm

Connector: RJ11

Wind vane Specifications

Height: 8.9 cm

Length: 17.8 cm

Maximum accuracy: 22.5°

Resistance range: 688 Ω ~ 120 kΩ

Pluviometer Specifications

Height: 9.05 cm

Length: 23 cm

Bucket capacity: 0.28 mm of rain

Conductivity Specifications

Sensor type: Two electrodes sensor

Electrode material: Platinum

Conductivity cell constant: $1 \pm 0.2 \text{ cm}^{-1}$

Cable length: ~500 cm

pH sensor Specifications

Sensor type: Combination electrode

Measurement range: 0~14 pH

Temperature of operation: 0~80 °C

Zero electric potential: $7 \pm 0.25 \text{ p}$

Response time: $< 1 \text{ min}$

Internal resistance: $\leq 250 \text{ M}\Omega$

Repeatability: 0.017

PTS (percentage of slope): > 98.5

Noise: $< 0.5 \text{ mV}$

Alkali error: 15 mV

Reader accuracy: up to 0.01 (in function of calibration)

Cable length: ~500 cm

Rigid Solar Panel 7V – 500mA specifications

Voltage : 7V

Current rating 500mA

Outdoor IEEE 802.15.4 WiFi 4G cloud gateway specifications

Processor – 1GHz quad Core

RAM memory – 2 GB

Disk memory - 16 GB

Power - 4 to 16 W (12 V)

Power source – via PoE

Max current supply – 1.5 to 2.5 A

Enclosure

- Material: metal or UV treated
- Weight: 2.2 kg
- Dimensions - 300 x 220 x 90 mm
- External protection - IP65

Temperature range - $-10 \text{ }^\circ\text{C} / 50 \text{ }^\circ\text{C}$

Response time to Ethernet ping - 60 s

Time to have all the services running – 60 s

System - Linux, Debian based

Dedicated embedded Manager software

Number of cloud support : 40+

Security - Authentication WPA, WPA2 – HTTPS

Certifications - CE (Europe) / FCC (US) / IC (Canada) / ANATEL (Brazil) / RCM (Australia) / PTCRB (US) / AT&T (US)

Connectivities on board

- IEEE 802.15.4
- WiFi
- Ethernet
- 4G