

College of Engineering Trivandrum

Thiruvananthapuram - 16

No.CET/1752/2025-P4

24-11-2025

QUOTATION NOTICE

Quotation Number	51/P4/25/ROB/CET
Due date and time for receipt of quotations	03/12/2025, 11 AM
Date and time for opening of quotations	03/12/2025, 11.30 AM
Date up to which the rates are to remain firm for acceptance	03/06/2026
Designation and address of officer to whom the quotation is to be addressed	The Principal, College of Engineering Trivandrum, Thiruvananthapuram-16. GSTIN:32AAAGC0358L1ZP
Superscription : Purchase of TurtleBot3 Robotics Platform to Robotics Lab Of ECE Department	

Sealed quotations are invited for the Purchase of TurtleBot3 Robotics Platform to Robotics Lab Of ECE Department specified in the list attached given below/overleaf. The rates quoted should be for the delivery of the articles at the places mentioned below the schedule. The necessary superscription, due date for the receipt of quotations, the date up to which the rates will have to remain firm for acceptance and the name and address of officer to whom the quotation is to be sent are noted above. Any quotation received after the time fixed on the due date is liable to be rejected. The maximum period required for delivery of the articles should also be mentioned. Quotations not stipulating period of firmness and with price variation clause and/or 'subject to prior sale' condition are liable to be rejected.

The acceptance of the quotations will be subject to the following conditions.

1. Withdrawal from the quotation after it is accepted or failure to supply within a specified time or according to specifications will entail cancellation of the order and purchases being made at the offers expenses from elsewhere, any loss incurred thereby being payable by the defaulting party. In such an event the Government reserves also the right to remove the defaulter's name from the list of Government suppliers permanently or for a specified number of years.
2. Samples, duly listed, should be forwarded if called for under separate cover and the unapproved samples got back as early as possible by the offers at their own expenses and the Government will in no case be liable for any expenses on account of the value of the samples or their transport charges, etc. In case, the samples are sent by railway, the railway receipt should be sent separately, and not along with the quotation since the quotation will be opened only on the appointed day and demurrage will have to be paid if the railway parcels are not cleared in time. Quotations for the supply of materials are liable to be rejected unless samples, if called for of the materials tendered for are forwarded. The approved samples may or may not be returned at the discretion of the undersigned. Samples sent by V.P. Post or "freight to pay" will not be accepted.

3. No representation for enhancement of price once accepted will be considered during the currency of the contract.
4. Any attempt on the part of tenderers or their agents to influence the Officers concerned in their favour by personal canvassing will disqualify the tenderers.
5. If any license or permit is required, tenderers must specify in their quotation and also state the authority to whom application to be made.
6. In cases where a successful tenderer, after having made partial supplies fails to fulfill the contracts in full, all or any of the materials not supplied may, at the discretion of the Purchasing Officer be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already and the loss, if any, caused to the Government shall thereby together with such sums as may be fixed by the Government towards damages be recovered from the defaulting tenderer
7. a) Half yearly payments will be made only after one or two successful service are actually verified . Bank charges incurred in connection with payment against documents through bank will be to the account of the contractor. The firms will produce stamped pre-receipted invoices in all cases where payments for release of railway receipts/shipping documents are made through Banks. In exceptional cases where the stamped receipts of the firms are not received for the payments (in advance) the unstamped receipt of the Bank (i.e. counterfoils or pay-in-slips issued by the Bank alone may be accepted as a valid proof for the payment made. b)The tenderers shall quote also the percentage of rebate (discount) offered by them in case the payment is made promptly within fifteen days/within one month of taking delivery of stores.
8. Any sum of money due and payable to the successful tenderer or contractor from Government shall be adjusted against any sum of money due to Government from him under any other contracts.
9. Special conditions, if any, printed on the quotation sheets of the tenderer or attached with the tender will not be applicable to the contract unless they are expressly accepted in writing by the purchases.
10. GST number must be mentioned in the quotation. The firm under composition scheme must mention the words "Composition taxable person" in their quotation and should submit proof for that.
11. The service should be at **ECE Department** of this institution.
12. The unit price, all other charges such as delivery, transporting, loading and unloading charges, and GST must be shown separately in the quotation

General Requirements

1. The platform shall be open-source, ROS-compatible, and capable of performing simultaneous localization and mapping (SLAM), autonomous navigation, and teleoperation.
2. All hardware and software components shall be factory-integrated, tested, and compatible with ROS 1 (Noetic) and ROS 2 (Humble).
3. The robot shall operate in both real and simulated environments (Gazebo, Rviz).
4. Complete source code, installation guides, and user manuals shall be provided.

Hardware Specifications

Component	Specifications
Chassis & Drive	Modular differential-drive platform with two independently driven wheels and one or more casters; support for payload expansion up to 1 kg
Motors	2 × DC geared motors with wheel encoders (≥ 11 -bit resolution)
Wheels	Rubberized wheels, ≥ 65 mm diameter
Power	Rechargeable Li-ion battery, ≥ 11.1 V, ≥ 1800 mAh; battery management circuitry and charger included
Controller Board	Open-source controller equivalent to OpenCR 1.0, supporting ROS serial communication and motor control
Single Board Computer (SBC)	Raspberry Pi 4 Model B (≥ 4 GB RAM) or equivalent ARM-based SBC; pre-installed Ubuntu LTS with ROS 1/2
Sensors	1. 360° LiDAR sensor (≥ 4 m range, 6 Hz) 2. IMU (3-axis accelerometer + 3-axis gyroscope) 3. Support for USB/depth camera (optional)
Connectivity	Wi-Fi 802.11 b/g/n, USB, UART, and GPIO interfaces
Mechanical Expansion	Expansion Provision to attach additional sensors or robotic arm
Dimensions & Weight	Compact size ≤ 150 mm $\times$ 150 mm $\times$ 200 mm; weight ≤ 1.5 kg

Software Specifications

Feature	Requirement
Operating System	Ubuntu 20.04 LTS or higher
ROS Compatibility	Fully compatible with ROS 1 Noetic and ROS 2 Humble
Simulation Support	Gazebo and RViz support with sample world files
Programming Support	Python 3 and C++
Navigation Functions	SLAM (gmapping, Cartographer), localization (AMCL), and autonomous path planning
Teleoperation	Control via keyboard, joystick, or smartphone through Wi-Fi
Mapping &	2D occupancy grid generation and live sensor

Visualization	visualization in RViz
Firmware Update	USB-based bootloader or equivalent mechanism
Documentation	Complete open-source manuals, tutorials, and code repositories accessible online

Deliverables

1. One complete TurtleBot3 Burger / Waffle Pi equivalent robot platform
2. One Li-ion battery pack with charger
3. All cables, tools, and mounting hardware
4. Preconfigured microSD card with Ubuntu + ROS image
5. Digital and printed user manuals
6. On-site installation, configuration, and testing
7. One practical demonstration covering mapping and navigation

Warranty

- 2-year comprehensive onsite warranty on all components.
- Firmware and software updates during the warranty period shall be free of charge.