

# QBOT PLATFORM

## High-performance Autonomous Ground Robot for Indoor Labs

The Quanser QBot Platform is an innovative open-architecture autonomous ground robot, built on a differential mobile platform. This solution is ideal for teaching undergraduate and graduate mobile robotics as it is accompanied by comprehensive courseware and equipped with built-in sensors such as LiDAR, front-facing RealSense camera, downward-facing camera, gyroscope, and accelerometer, all powered by an onboard NVIDIA Jetson Orin Nano computer.

The QBot Platform provides an electromechanical prototyping bay for adding project components. It is also equipped with a reinforced landing pad for drones and additional cargo. The open control architecture allows users to seamlessly integrate off-the-shelf sensors and customize the QBot Platform for their research. The solution is well suited for designing and developing applications related to autonomy, navigation and control, machine learning, computer vision, multiagent heterogenous and swarm robotics, and more.

### Features



**Project-ready**  
Electromechanical prototyping bay and fully accessible 40-pin I/O header



**Course-ready**  
Relevant lab content for courses tailored to both mobile & manipulator robotics



**Research-ready**  
Deploy applications via MATLAB®, Simulink®, Python, C++ and ROS

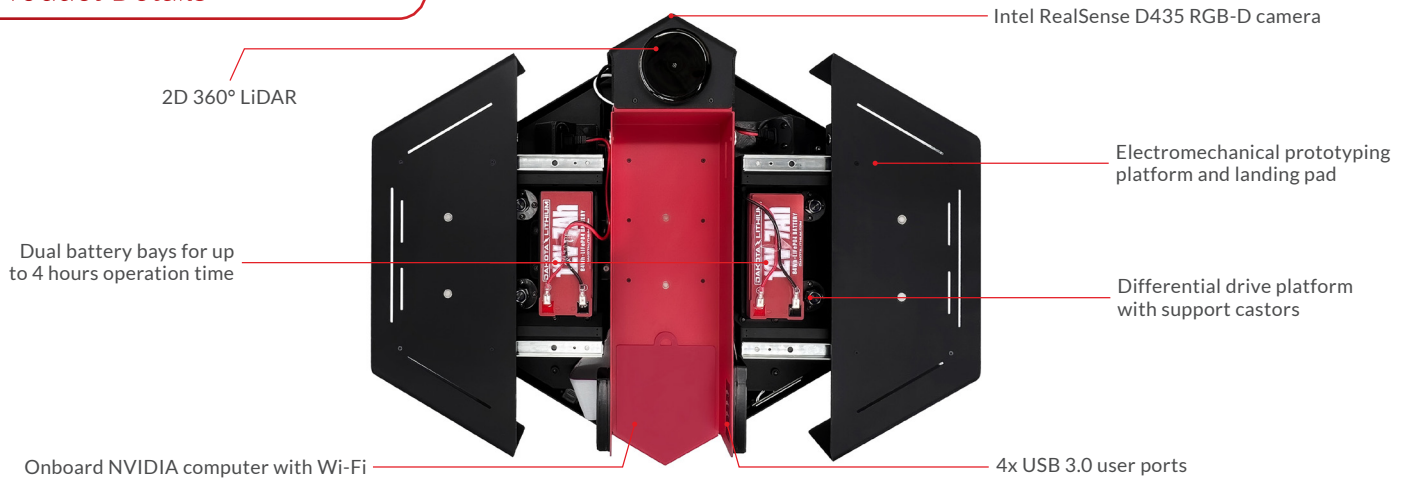


**Swarm-ready**  
Cost-effective pricing and bundle options allow multiple units in a lab

### Suitable Exploration Pathways

- Forward and inverse differential kinematics
- Dead reckoning and odometric localization
- Path planning and obstacle avoidance
- Machine learning and deployment
- 2D mapping and LiDAR localization
- Image acquisition, processing, and reasoning
- Multi-agent control & industrial automation
- Vision-guided vehicle control

## Product Details\*



## QBot Platform System Components

- QBot Platform ground robot
- QUARC Complete License
- Reconfigurable Environment (12' x 12') (3.6m x 3.6m) and Walls
- High-performance router
- QArm Mini sold separately

## Device Specifications\*

Platform	2-wheel differential drive base with 4 support castors
Diameter	570 mm
Height	227 mm
Weight (with two batteries)	17kg
Drivetrain sensing	Current sensing, optical encoders, and digital tachometer per wheel
Maximum motion	1.5 m/s speed and 1 m/s/s acceleration
Nominal motion	0.7 m/s speed and 0.5 m/s/s acceleration
Maximum payload @ maximum motion	20 kg
Operation time	2 hours per battery
Power	Up to 2x 84Wh LFP batteries w/ external charging
On-board computer	NVIDIA Jetson Orin Nano
Downward facing camera	Grayscale w/ global shutter – 640x400 @ 120Hz
Front facing camera	Intel RealSense D435 RGB-D camera
LiDAR	2D 360° lidar w/ 16,800 points per second
IMU	6-axis IMU w/ accelerometer and gyroscope
GPIO	40-pin header including SPI / I2C / UART / PWM
LEDs	User programmable LEDs
LCD	Character display module
Language support	MATLAB / Simulink / Python / ROS 2
USB ports	4x USB 3.0 user ports
HDMI	1 full HDMI port
Connectivity	IEEE 802.11ac Wi-Fi & Gigabit Ethernet port

\* Subject to change

### About Quanser:

Quanser is the world leader in education and research for real-time control design and implementation. We specialize in outfitting engineering control laboratories to help universities captivate the brightest minds, motivate them to success, and produce graduates with industry-relevant skills. Universities worldwide implement Quanser's open architecture control solutions, industry-relevant curriculum, and cutting-edge workstations to teach introductory, intermediate, or advanced controls to students in Electrical, Mechanical, Mechatronics, Robotics, Aerospace, Civil, and various other engineering disciplines.

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