QDrone 2

Quanser innovation unleashed in the autonomous vehicle research space

The Quanser QDrone 2 autonomous air vehicle is a midsized quadrotor equipped with a powerful on-board NVIDIA® Jetson Xavier™ NX system-on-module (SOM), multiple high resolution cameras and built-in WiFi. This open-architecture research-grade drone is tuned to accelerate your innovation in multi-agent, artificial intelligence, machine learning, and vision-based applications.

The optimized and robust carbon fiber frame makes the QDrone 2 highly maneuverable and capable of withstanding high-impact collisions without down time for repairs between flights. The powerful on-board processor and multiple accelerated high-resolution cameras enable novel on-board video processing, as well as streaming for real-time monitoring.

Features

NVIDIA System-On-Module (SOM)

NVIDIA Jetson Xavier NX SOM

Durable

Robust carbon-fibre frame suitable for advanced applications

Open Software Architecture

Design, deploy, and tune your algorithms through QUARC™ for Simulink®

Extensive and Expandable

Multiple on-board cameras, additional digital and analog I/O channels for advanced robotics applications.

Research Studio

The Autonomous Vehicles Research Studio comes with everything you need to jumpstart your research.

Vehicles
- QDrone 2
- QBot Platform (optional)

Ground Station
- High performance computer: Intel® Core i7 NVIDIA RTX Graphics card 32 GB DDR4 RAM
- Three monitors
- USB flight controller joystick
- High performance router

Studio Space
- Natural Point Optitrack Flex 13
- Battery chargers
- Protective net
- Protective floor tiles
- Ground camera

Product Details

Expandable I/O

NVIDIA Jetson
Xavier NX SOM

Multiple RGB Cameras
for 360° view

Impact resistant

Intel® RealSense™
RGBD camera

Omnivision Global
shutter camera

Optical
flow sensor

Time of flight
(ToF) sensor

Device Specifications

Dimensions	50 x 50 x 15 cm	
Weight (with batteries)	~1500 g	
Max Payload	~300 g	
Power	4S 14.8V LiPo (3700mAh) with XT60 connector	
Flight time	7-8 minutes for hover per battery charge	
Onboard Computer	NVIDIA Jetson Xavier NX SOM (powered by a 6-Core NVIDIA Carmel ARM v8.2 64-Bit processor) 384-core NVIDIA Volta GPU with 48 Tensor Cores 8 GB 128-bit LPDDR4x RAM	
Expandable I/O	PWM (2x) UART (2x) SPI (2x SS pins) I^2 (2x)	ADC (1x) Encoder Input 2x CPU GPI0 6x
Intel® RealSense™ (D435)	Depth sensing (3 metre range) RGB (1920x1080 @ 30FPS)	
Omnivision OV9281	Grayscale (1280x800 @ 120 FPS or 640x480 @ 180 FPS)	
Sony IMX219	3x RGB CSI 160 deg FOV wide angle lenses cameras providing side and back view, 21 FPS to 120 FPS	
On board sensors	2x 6-DOF IMU (gyroscope and accelerometer), 1x ToF height sensor	
Connectivity	WiFi 802.11 a/b/g/h/n/ac 867Mbps with dual antennas	1x Micro HDMI port for external monitor support

Supported Software and APIs

- QUARC for Simulink®
- Quanser APIs
- TensorFlow
- TensorRT
- Python™ 2.7 & 3
- ROS 1 & 2
- CUDA®

- cuDNN
- OpenCV
- Deep Stream SDK
- VisionWorks®
- VPI™
- GStreamer
- Jetson Multimedia APIs

- Docker containers with GPU support
- Simulink® with Simulink Code
- Simulation and virtual training environments (Gazebo and Quanser Interactive Labs)

- Multi-language development
- supported with Quanser Stream
- APIs for inter-process
- Communication
- Unreal Engine

About Quanser:

For 30 years, Quanser has been the world leader in innovative technology for engineering education and research. With roots in control, mechatronics, and robotics, Quanser has advanced to the forefront of the global movement in engineering education transformation in the face of unprecedented opportunities and challenges triggered by autonomous robotics, IoT, Industry 4.0, and cyber-physical systems.