QARM

Modern manipulator arm for robotics courses and research

Quanser's QArm is a 4 DOF robotic serial manipulator with a tendon-based two-stage gripper and an RGBD camera, designed for modern engineering education and academic research applications. Leveraging the intuitive graphical interface of Simulink® or expandability of Python™ and ROS, students get a systematic understanding of the design of robotic systems and concepts, including joint control, kinematics, path planning, statics, and dynamics. QArm comes with comprehensive studio-type course resources to motivate students and provide the basis for interactive challenges. The QArm curriculum is mapped to popular robotics textbooks by Mark Spong and John Craig.

The open architecture design of QArm allows researchers to quickly develop and deploy their applications in machine learning, assistive robotics, collaborative robotics, and more using both custom and internal control schemes.

Features

Flexible and Safe

Suite of sensors and control modes for a wide range of cascaded teaching and research applications

Open Architecture

Quick development and validation of algorithms and control approaches

Expandable

Compatibility with a range of software environments and interface options, with expandable I/O for unlimited applications

Comprehensive Courseware

Studio-course resources mapped to popular robotics textbooks

Workstation Components

Manipulator	QArm with QFLEX 2 interface panel of your choice (USB or Embedded)[1]
Data acquisition device	Integrated
Amplifier	Integrated
Control design environment	QUARC™ for MATLAB®/Simulink® Python™, including ROS

[1] QArm comes with one interface panel of your choice. Additional interface panels can be purchased separately.

Product Details

RGBD camera

Lower arm

Elbow joint

End-effector DAQ

Two-finger gripper

Wrist joint

Upper arm

Shoulder joint

Base with QFLEX 2 interface panel

Courseware

Complete curriculum for QUARC users:

- Introduction to QArm sensors and components
- Joint control
- Forward kinematics
- Inverse kinematics

- Path planning
- Differential kinematics
- Statics

- Visual servoing
- Guided examples for Python users (including ROS) - *Coming soon*

Device Specifications

Manipulator weight	8.25 kg
Payload	250 - 750 g
Reach	750 mm
Repeatability	± 0.05 mm
Camera	Intel® RealSense™ D415
Interface	USB/SPI (QFLEX 2)
Internal control modes	Position mode, Current mode
External control rate	500 Hz
Expandable I/O	PWM/Analog/I^{2}C/SPI/UART
Minimum and maximum joint range	Base: ± 170° Shoulder: ± 85° Elbow: -95°/+75° Wrist: ± 167.5°
Maximum joint speed	± 90°/s

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.