QUANSER
INNOVATE · EDUCATE

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

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

Open Architecture

Fully instrumented smart servomotors and vision system

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 USB
Data acquisition device	Integrated
Amplifier	Integrated
Control design environment	QUARC™ for MATLAB®/Simulink® Python™, including ROS

Product Details

Courseware

Complete curriculum for QUARC users

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

Guided examples for Python

- Joint space navigation
- Task space navigation

Guided examples for ROS users

- Joint space pick and place
- Task space pick and place
- ROS action server/client

Device Specifications

Manipulator weight	8.25 kg
Payload	350 - 750 g
Reach	750 mm
Repeatability	± 0.05 mm
Camera	Intel® RealSense™ D415
Interface	USB (QFLEX 2)
Internal control modes	Position mode, Current mode
External control rate	500 Hz
Internal control rate (min)	1000 Hz
Expandable I/O	PWM/Analog/I²C/SPI/UART
Minimum and maximum joint range	Base: ± 170° Shoulder: ± 85° Elbow: -95°/+75° Wrist: ± 160°
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.