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Award

Supply of 90 × Qube-Servo 3 to the University of Birmingham

THE UNIVERSITY OF BIRMINGHAM

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Notice identifier: 2025/S 000-034564

Procurement identifier (OCID): ocds-h6vhtk-05522b

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Scope

Reference

SC13955/25

Description

The Quanser Qube Servo 3 system is an innovative and unique solution for laboratory teaching in the subjects of Control Systems and Mechatronics. The School of Engineering and CTL aim to replace our outdated kit (which is now obsolete) with the Servo3 as a vital part of our undergraduate teaching provision. The system provides a unique solution, fully integrated with MATLAB®/Simulink® (which is used throughout the School in teaching and research). The hardware, will be used in labs within our curriculum to enable students to experience the practical side of motor physics, simulation and modelling, and will allow the design implementation and test of a range of control engineering solutions. This is a vital part of our world-leading engineering education.

A crucial element is that the hardware is complemented by state-of-the-art digital twins which allow students to experiment on the twin using MATLAB®/Simulink® (e.g. for revision or lab-prep), from home. The Faculty License will allow access to the full set of

Quanser's digital twins and includes the real-time control software for all students and staff. These teaching platforms distinguish themselves significantly from anything else available on the market (in fact there is nothing remotely similar in terms of functionality). Our purchase will ensure continuity of our excellent research-led teaching related to mechatronics, electric machines and control engineering.

The Qube servo 3 will enable us at the University to continue study of Control Engineering, Control Fundamentals Modelling of mechanical and electric systems Analysis of systems Steady state error analysis, Stability (Simplified Nyquist), Stability margins. Control Design Design based-upon Nichols and/or Bode plots Compensator design via classical loop-shaping Case studies

Where student can Implement the skills and knowledge acquired during the module in the design and construction of a complete system.

We are faced with the current Engineering module equipment becoming obsolete as no longer manufactured. The effects this would have on the teaching would see a drop in overall dynamics so is crucial to maintain the level that we have achieved in previous years. Securing the purchase from Quanser will provide a seamless transition that cannot be replaced and evident whilst researching products from existing suppliers. We can continue to work in tandem using current software with the Qube servo 3 and integrate the additional software widely utilized across the university campus such as Matlab and Simulink.

The Quanser Qube-Servo 3 is an integrated DC-servo motor experiment. It is designed to help teach fundamental control concepts and theories on an easy-to-use and intuitive platform

This will enhance student experience as the package gives us more capabilities from its technical specifications and scope to provide and support Engineering taught labs using emerging technology in comparison to current equipment which will no longer be viable

Contract 1

Supplier

- Quanser UK Ltd

Contract value

- £277,917.30 excluding VAT
- £333,500.76 including VAT

Above the relevant threshold

Earliest date the contract will be signed

24 June 2025

Contract dates (estimated)

- 2 July 2025 to 28 May 2026
- 10 months, 27 days

Main procurement category

Goods

CPV classifications

- 48461000 - Analytical or scientific software package

Contract locations

- UK - United Kingdom

Participation

Particular suitability

Small and medium-sized enterprises (SME)

Other information

Conflicts assessment prepared/revised

Yes

Procedure

Procedure type

Direct award

Direct award justification

Extreme and unavoidable urgency

Quanser is the Sole manufacturer of the products included in the quotation.

Outline the features and benefits in the proposed Qube Servo 3 that are unique to Quanser and cannot be found in similar solutions in the market available to academia.

The Qube Servo 3... • is a fully-integrated rotary servo motor plant with instrumentation, amplifier and DAQ. This is the only fully integrated solution for rotary control systems labs available to academia. • has an open architecture design, which means that no element of the Qube Servo 3 is black boxed to the user, and users gain direct access to all the sensing and actuating elements of the experiment. This allows users and researchers to develop and deploy their own control algorithms and custom code on the experiment. • Includes a fully developed courseware to address most topics covered in university-level courses. The courseware includes editable instructor and student workbooks to enable integrating into the current and future courses efficiently and flexibly by the instructor. • Is complemented by QLABs Virtual Qube Servo 3 Digital Twin, a fully instrumented, dynamically accurate virtual twin of the physical Qube-Servo 3 system. It behaves in the same way as the physical hardware and can be measured and controlled using MATLAB®/Simulink® and other development environments. This allows students to explore and validate sophisticated control systems models from the comfort of their home, and they can find continuity by deploying the very same ones onto real hardware. • Furthermore, the Quanser Faculty License offers access to all 11 of our digital twins for student and staff installation. This includes our high-end research platforms, QCar 2, QDrone 2, QBot Platform and QArm. This software, Quanser Interactive Labs is unique to Quanser and not available anywhere else.

Supplier

Quanser UK Ltd

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Region: UKI31 - Camden and City of London

Small or medium-sized enterprise (SME): Yes

Voluntary, community or social enterprise (VCSE): No

Contract 1

Contracting authority

THE UNIVERSITY OF BIRMINGHAM

- Companies House: RC000645
- Public Procurement Organisation Number: PHCQ-3464-LVTM

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Organisation type: Public authority - sub-central government