HEXAPOD

Featuring six Degrees of Freedom (DOF), the Hexapod motion platform is a reliable and easy-to-use test bed for advanced research in areas including vibration isolation, structural dynamics immersive simulations and rehabilitation.

System specifications on reverse page.

INDUSTRIAL-GRADE PERFORMANCE

The Hexapod is parallel robotic device capable of moving heavy loads (up to 100 kg) at high accelerations, within a small workspace. The smart mechanical design, along with accurate and stiff machined components make this robot an excellent tool for cutting-edge research. This stewart platform is controllable through seamless integration of QUARC® and MATLAB®/Simulink®. Unlike most commercially available steward platforms, the Hexapod is driven by superior electrical motors which make this six DOF motion platform precise, responsive and low-maintenance. Using Quanser's novel data acquisition technology users can interface to Hexapod through a USB connection, while maintaining a high real-time performance. Many features like the powerful DC motors with a built-in brake, a precise ball screw mechanism, high-resolution optical encoders and low-friction joints help researchers achieve accurate manipulations.

HOW IT WORKS

Comprised of a six linear ball-screw actuators, the hexapod is driven by six DC motors. The ball-screw is based on a high-quality, low back-lash linear guide with a total travel of 30 cm (i.e. ± 15 cm) and is driven by a high torque direct drive motor. All six arms of the platform meet at a flat rectangular base, the end-effector of the robot. A revolute joint fastens the arms to each motor. For maximum safety, a motor brake control employs the Hexapod's brakes when the joints reach their limit. This ensures the powerful motors do not damage the device or the load it carries. Motor position feedback for all six motors is provided by optical encoders that measure the angular position of the motor shaft. An optional six axes ATI force/torque sensor can be installed on the end-effector to capture measurements of forces and torques along all degrees of freedom.

HEXAPOD WORKSTATION COMPONENTS

Hexapod unit

QUARC real-time control software for MATLAB®/Simulink®

Hexapod-ready PC

Sample pre-built controllers

Optional force/torque sensor

A robust and heavy-duty motion platform, the hexapod is a reliable test bed for advanced research

Note: The Hexapod is not available for purchase in North America, Japan and Taiwan. For details, please contact us at info@quanser.com

SYSTEM SPECIFICATIONS

Hexapod Unit

FEATURES

- High precision ball screw mechanism
- Safety brake logic circuit and built-in mechanical brakes
- Easy interface through universal USB connection
- Optional six DOF force/torque sensor
- High performance amplifier
- Built-in software safety watchdog
- Allows for integration of third party structures, sensors and actuators (additional data acquisition device required)
- Precise, stiff and heavy-duty machined components
- Highly flexible operation and control design with MATLAB®/Simulink® via QUARC®
- Fully documented system models and parameters
- Open architecture

DEVICE SPECIFICATION

Dimensions: (L x W x H)	1.1 m x 1.1 m x 0.75 m		
Weight	100 kg		
Platform radius	0.25 m		
Arm length	0.375 m		
Workspace[1]	±13 cm (x) ±20 deg (roll)	±7.5 cm (y) ±23 deg(pitch)	±7.5 cm (z) ±27 deg (yaw)
Maximum joint speed[2]	0.67 m/s		
Maximum load[2]	100 kg		
Maximum acceleration[2]	1 g		
Frequency range[2]	0 - 10 Hz		
Actuator maximum force	403 N		
Actuator travel	0.3 m		
Encoder resolution	10,000 count/rev		

[1]Assuming other five DOF's held at home position
[2]For more details and full bandwith specifications, please contact Quanser

COMPLETE WORKSTATION COMPONENTS

Plant	Hexapod
Control design environment	Quanser QUARC® add-on for MATLAB®/Simulink®
Documentation	Lab setup guide
Real-time targets	Microsoft Windows®
Data acquisition devices	Quanser Q8-USB (built-in)
Amplifier	Built-in

Simulink pre-built controller is supplied

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 work stations to teach Introductory, Intermediate or Advanced controls to students in Electrical, Mechanical, Mechatronics, Robotics, Aerospace, Civil, and various other engineering disciplines.