HEXAPOD

Featuring six Degrees of Freedom (DOF), the Hexapod motion platform is suitable for earthquake simulation, flight simulation and vibration. Bundled with QUARC®, a powerful rapid control prototyping software, the Hexapod is a reliable and easy to use test bed for advanced research. Its powerful features offer unmatched value and provide industrial-grade performance for research in vibration isolation, motion platforms, rehabilitation, immersive arcade games and structural dynamics.

THE POSSIBILITIES WILL MOVE YOU

The Hexapod is parallel robotic device capable of moving heavy loads 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®/Simulimk®. 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 powerful features like the powerfull 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.

INDUSTRIAL-GRADE PERFORMANCE

This motion platform carries heavy loads up to 250Kg. Comprised of a six linear ball-screw actuators, it is driven by six DC motors. The ball-screw is based on a high-quality, low backlash 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 revoult 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.

Please see system specifications on reverse.

HEXAPOD SYSTEM

Consists of a Hexapod unit (1)

QUARC® software (2)

Hexapod-ready PC (3)

Optional force/torque sensor (4)

The Hexapod dynamic model, a selection of pre-built controllers and Lab setup guide (provided in electronic format on CD) and PC (5)

A robust and heavy-duty motion platform, the Hexapod facilitates an immersive simulation as one of its many applications.

Rev 1.0

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
- Easy integration of third party structures, sensors and actuators
- Built-in software safety watchdog
- Highly flexible operation and control design with Matlab®/Simulink® via QUARC®
- Precise, stiff and heavy-duty machined components
- Fully documented system models and parameters
- High-resolution optical encoders to measure the joint angles
- Open architecture

DEVICE SPECIFICATION

	X	Y	Z	Roll	Pitch	Yaw
Maximum Force, Torque (N, N.m)*	1156.89	1335.86	3797.62	548.14	632.94	500.95
Workspace (m, deg)*	0.30	0.30	0.19	36.81	36.81	50.19
Maximum Speed (m/s, deg/s)*	0.67	0.67	0.35	152.79	152.79	80.62
Total moving mass (kg)	6					
Max acceleration (g)	1					
Frequency range (Hz)**	0 - 20					
Max load (kg)	250					
Dimensions: L x W x H (m)	1.1 x 1.1 x 0.75					
Platform radius (m)	0.25					
Arm length	0.375					
Actuator maximum force (N)	334					
Actuator travel +/- (m)	0.3					
Encoder Resolution (counts/rev)	4096					
Weight (kg)	100					
Rated Power (W)	1500					

*Assuming other five DOF's held at home position ** Contact Quanser for full bandwidth specs and graphs

COMPLETE WORKSTATION COMPONENTS

The following components are provided with the plant to offer a self-sufficient workstation for teaching and research.

Controller Design Environment:	QUARC® seamlessly integrated with Matlab® and Simulink®
Documentation:	Lab setup guide
Targets:	Microsoft Windows®, QNX® Momentics and INtime®
Data Acquisition Cards:	Integrated Q8-USB
Amplifier:	Built-in

The complete dynamic model and Simulink pre-built controllers are also supplied.

OTHER COMPATIBLE COMPONENTS

Controller Design Environment:	LabVIEW™

LabVIEW pre-built controllers are also supplied.

**Please visit www.quanser.com for a detailed list of National Instruments™ card support.

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. Quanser educational solutions are fully compatible with:

QNX SOFTWARE SYSTEMS | LabVIEW | Maple 12 | Simulink Enabled