

Phantom[®] Premium[™]

Advanced haptic devices for academic and commercial research and development

The 3D Systems Phantom[®] Premium[™] haptic devices fulfill the requirements of a vast range of research and commercial applications. These high-precision devices provide the largest workspaces and highest forces in the Phantom line while offering a broad range of force feedback workspaces, various ranges of motion and varying stiffness. Phantom Premium haptic devices also come in 6DOF models, which offer 6 degrees of freedom (3 translational, 3 torque) in output capabilities suitable for virtual prototyping, maintenance path planning and molecular modeling applications.

With ranges of motion approximating hand movement pivoting at the wrist, elbow or shoulder, the Phantom Premium can fulfill the requirements of manufacturing verification, machine component visualization, medical research and simulation, and an assortment of other haptically-enabled 3D applications.

While the models are designed with different ranges of motion and specifications, each one is constructed for maximum durability and simple PC connection via the parallel port (EPP) interface. A wide variety of end-effector devices enable options including thimble gimbals, finger sleds, pinch functionality and more.

The Open Haptics Toolkit available with these devices delivers a comprehensive software library to enable rapid development of applications using force-feedback.



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Phantom Premium 6DOFs Specifications



		Premium 1.5 / 6DOF	Premium 1.5 High Force / 6DOF	Premium 3.0 / 6DOF
Workspace	Translational	15 W x 10.5 H x 7.5 D in 381 W x 267 H x 191 D mm	15 W x 10.5 H x 7.5 D in 381 W x 267 H x 191 D mm	33 W x 23 H x 16 D in 838 W x 584 H x 406 D mm
	Rotational Yaw Pitch Roll	297 degrees / 5.18 radians 260 degrees / 4.54 radians 335 degrees / 5.85 radians	297 degrees / 5.18 radians 260 degrees / 4.54 radians 335 degrees / 5.85 radians	297 degrees / 5.18 radians 260 degrees / 4.54 radians 335 degrees / 5.85 radians
Range of motion		Lower arm movement pivoting at elbow	Lower arm movement pivoting at elbow	Full arm movement pivoting at shoulder
Nominal position resolution	Translational	860 dpi / 0.03mm	3784 dpi / 0.007 mm	> 1000 dpi / ~0.02 mm
	Rotational Yaw & Pitch Roll	0.0023 degrees/0.00004 radians 0.0080 degrees/0.00014 radians	0.0023 degrees/0.00004 radians 0.0080 degrees/0.00014 radians	0.0023 degrees/0.00004 radians 0.0080 degrees/0.00014 radians
Maximum exertable force and torque at nominal position (orthogonal arms)	Translational	1.9 lbf / 8.5 N	8.4 lbf / 37.5 N	4.9 lbf / 22N
	Rotational Yaw & Pitch Roll	73 oz-in / 515 mNm 24 oz-in / 170 mNm	73 oz-in / 515 mNm 24 oz-in / 170 mNm	73 oz-in / 515 mNm 24 oz-in / 170 mNm
Stiffness		20 lbf in ⁻¹ / 3.5 N mm ⁻¹	20 lbf in ⁻¹ / 3.5 N mm ⁻¹	5.7 lbf in ⁻¹ / 1 N mm ⁻¹
Force feedback (6 Degrees of Freedom)		x, y, z, Tx, Ty, Tz	x, y, z, Tx, Ty, Tz	x, y, z, Tx, Ty, Tz
Position sensing/input (6 Degrees of Freedom)		x, y, z, roll, pitch, yaw	x, y, z, roll, pitch, yaw	x, y, z, roll, pitch, yaw
Interface		Parallel port	Parallel port	Parallel port
Optional end effectors		Thumb pad (pinch), scissors	Thumb pad (pinch), scissors	Thumb pad (pinch), scissors

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3D Systems provides comprehensive 3D products and services, including 3D printers, print materials, on-demand parts services and digital design tools. Its ecosystem supports advanced applications from the product design shop to the factory floor to the operating room. As the originator of 3D printing and a shaper of future 3D solutions, 3D Systems has spent its 30 year history enabling professionals and companies to optimize their designs, transform their workflows, bring innovative products to market and drive new business models. Specifications subject to change without notice. 3D Systems, Geomagic and the 3D Systems Logo are trademarks of 3D Systems, Inc. All other trademarks are the property of their respective owners.