

# Phantom® Premium™



3DSYSTEMS®

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 range 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 in.

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.



[www.3dsystems.com](http://www.3dsystems.com)

MANUFACTURING THE FUTURE

# Phantom<sup>®</sup> Premium<sup>™</sup>



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## Phantom Premium Specifications



		Premium 1.5	Premium 1.5 /6DOF	Premium 1.5 High Force	Premium 1.5 High Force /6DOF	Premium 3.0/6DOF
<b>Workspace</b>	<b>Translational</b>	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
	<b>Rotational</b> 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
<b>Range of motion</b>		Lower arm movement pivoting at elbow		Lower arm movement pivoting at elbow		Full arm movement pivoting at shoulder
<b>Nominal position resolution</b>	<b>Translational</b>	860 dpi/0.03mm		3784 dpi/0.007 mm		> 1000 dpi /~0.02 mm
	<b>Rotational</b> 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
<b>Maximum exertable force and torque at nominal position (orthogonal arms)</b>	<b>Translational</b>	1.9 lbf/8.5 N		8.4 lbf/37.5 N		4.9 lbf/22N
	<b>Rotational</b> 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
<b>Stiffness</b>		20 lbf in <sup>-1</sup> 3.5 N mm <sup>-1</sup>		20 lbf in <sup>-1</sup> 3.5 N mm <sup>-1</sup>		5.7 lbf in <sup>-1</sup> 1 N mm <sup>-1</sup>
<b>Force feedback</b> (6 Degrees of Freedom)		x, y, z	x, y, z, Tx, Ty, Tz	x, y, z	x, y, z, Tx, Ty, Tz	x, y, z, Tx, Ty, Tz
<b>Position sensing/input</b> (6 Degrees of Freedom)		x, y, z, roll, pitch, yaw		x, y, z, roll, pitch, yaw		x, y, z, roll, pitch, yaw
<b>Interface</b>		Parallel port		Parallel port		Parallel port
<b>Optional end effectors</b>		Encoder gimbal	Thumb pad (pinch), scissors	HF Encoder gimbal	Thumb pad (pinch), scissors	Thumb pad (pinch), scissors

## Contact Information

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## About 3D Systems

3D Systems is a leading provider of 3D content-to-print solutions including 3D printers, print materials and on-demand custom parts services for professionals and consumers alike. The company also provides CAD, reverse engineering and inspection software tools and consumer 3D printers, apps and services. Its expertly integrated solutions replace and complement traditional methods and reduce the time and cost of designing new products by printing real parts directly from digital input. These solutions are used to rapidly design, create, communicate, prototype or produce real parts, empowering customers to create and make with confidence.

Specifications subject to change without notice.

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