



phantom®
HAPTIC DEVICES

Phantom Communication Converter Device Guide

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Hardware usage guidelines are provided to assist the user in protecting the effectiveness and life of the device. They are not intended as recommendations for the prevention of repetitive stress injury, carpal tunnel syndrome or any other conditions, injuries or disorders; users should consult their own physicians. By using the Phantom device, the user acknowledges and agrees that Sensable shall have no liability for any disorder, condition or injury arising from any use of the device.

Warning Do NOT open the Phantom device. Attempting to open or repair the device by anyone other than a certified authorized service center voids the manufacturer warranty and hardware maintenance contract.

Questions or Comments

If you have any questions for our technical support staff, please contact us at support@sensible.com. You can also phone 1-888-SENSABL (U.S.A. only) or 1-781-939-7444 (International).

If you have any questions or comments about the documentation, please contact us at documentation@sensible.com.



P/N - 03101 R4: 5/18/11

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Preface

About this Guide

The Phantom® Communication Converter Device Guide describes the process of installing the required device drivers and connecting the hardware device to your Phantom haptic device and computer.

For the most current device information please visit the SensAble website at www.sensable.com.

We've worked extensively to ensure that the Phantom Communication Converter (PCC) and Phantom® Device Drivers (PDD) install and work smoothly. If you experience any problems in the installation or use of your device, please contact Sensable support (see inside cover for contact information).

Typographical Conventions

This guide uses the following typographical conventions:

Convention	Description	Example
<i>Italics</i>	First use of a new term; reference to another document or file.	A <i>Voxel</i> is...; see the <i>User Manual</i> .
Bold	Keywords, actual user input, or examples.	Click Ok .
Greater Than (>)	Indicates a menu pick, as in “select Options from the Tools menu”.	Tools>Options

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Getting Started

This guide covers the currently shipping Phantom Communication Converter. The information contained in this manual was current at the time of publication. Visit www.sensable.com for the latest information.

This chapter describes the following:

- The contents of the shipping box
- The Phantom Communication Converter device
- System Requirements

Contents of the Shipping Box

If you are purchasing a Phantom Communication Converter, in your shipping box you should find the following:

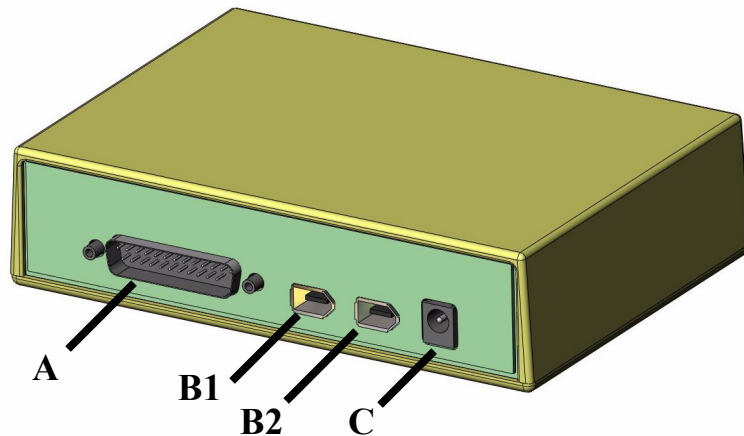
- **The Phantom Communication Converter device:** A custom designed converter that provides FireWire® compatibility to SensAble Phantom parallel port devices.
- **The Phantom Communication Converter Device Guide:** (This document) Describes the process of connecting the Communication Converter device as well as how to work with the device.
- **Two FireWire® Cables:** One 6-pin to 6-pin cable for use with a desktop computer and one 6-pin to 4-pin cable for use with a laptop computer.
- **DC Power Adapter Kit:** A Universal 12V DC power adapter kit.
- **PDD CD:** A disc containing the Phantom Device Drivers is included.

If any items are missing, please call SensAble at 1-888-SENSABL.

The Phantom Communication Converter

The SensAble Technologies Phantom Communication Converter enables the Phantom haptic devices that use parallel port communication to be connected to computers that are not equipped with parallel ports through a FireWire port.

The image below shows the connections found on the back of the Phantom Communication Converter.



Connections

A Standard Parallel port: This parallel port is used to connect to the male bottom connector of the Phantom device using the IEEE-1284 rated cable that was provided with the Phantom device.

B1-B2 Standard (6-pin) FireWire ports: Either of the two FireWire ports can be used to connect to the FireWire port on the computer using the SensAble supplied FireWire cable.

C Power plug connector: A 12V SensAble supplied DC adapter is used to power the PCC device (See note). The power plug from the DC power adapter connects into this socket. Use only the 12V DC power adapter provided by SensAble technologies for the operation of the equipment.

Note The PCC device powers itself when connected using a 6-pin FireWire cable to the computer. The DC power adapter is only needed when connecting the PCC device to a 4-pin FireWire port on a PC.

System Requirements

The Phantom Communication Converter device requires certain hardware and software components to be able to function properly. This section describes the requirements for operating the Phantom Communication Converter device.

Note Visit www.sensable.com to get the latest and most complete system requirements information.

- IEEE-1394a-2000 compliant FireWire® port.
- Windows XP, Vista or Windows 7.
- The most current version of the Phantom Device driver (PDD). See the document *Installing Phantom Device Drivers* for specific PDD requirements.

- A SensAble supplied 6-6 pin FireWire cable. Laptop Users please note that SensAble recommends using a 6-6 pin cable and add-in card instead of 6-4 pin cable. See www.sensable.com for the latest information.

IMPORTANT

SensAble Technologies uses only FireWire components that exceed the IEEE 1394 implementation recommendations. SensAble is not responsible for any damage that may result from using 3rd party cables.

1 GETTING STARTED

System Requirements

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Device Setup

This chapter will describe, step by step, how to install the Phantom Communication Converter device. The installation is done in two steps.

- Install the software, the Phantom Device Driver.
- Connecting the hardware, the Phantom Communication Converter.

Installing the Phantom Device Drivers

If you purchased the PCC to use with a SensAble software product such as FreeForm Modeling or the OpenHaptics Toolkit, the specific PDD required for that application will be found on your software product CD. Locate the Phantom Device Drivers folder and double-click to open it.

Specific instructions for installing the PDD on Windows XP, Vista and Windows 7 operating systems can be found in the *Phantom Device Driver Installation Guide*. For installation instructions for other operating systems, see the additional documentation shipped with your device or software product or contact customer support

Note As with most other software packages, you must have administrator privileges on the machine in order to install software. If you are unfamiliar with installing software or do not have administrator privileges, please have your System Administrator execute the following steps for you.

Running the Phantom Configuration Tool

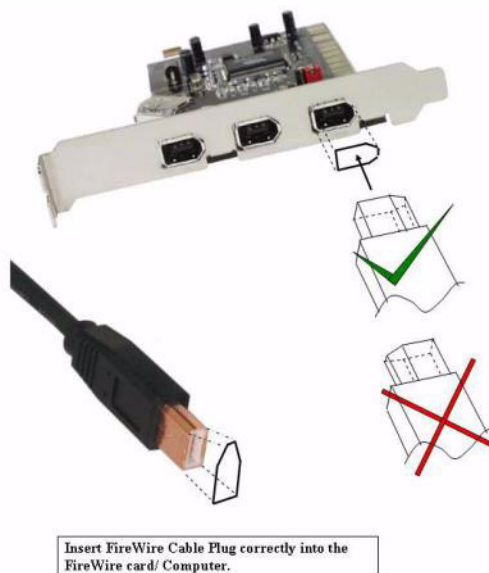
- 1 On the “Phantom Configuration” screen, select your Phantom device from the “Phantom Model” pull-down menu.
- 2 Select the 1394 Port from the "Interface" pull-down menu to indicate that the Phantom is connected to the FireWire port using the PCC device.
- 3 On the Install Shield Window, select “**Yes I want to restart my computer now.**” Click **Finish**.

At this point the device driver is installed and configured and you are ready to connect your PCC device.

Connecting the Phantom Communication Converter

In this section you will setup the PCC and plug in all of the cables.

- 1 Restart your computer after installing the PDD if you have not already done so.
- 2 Connect the Phantom device to the parallel port on the rear of the PCC device using the IEEE-1284 rated cable that came with your Phantom device.
- 3 Connect the PCC device to your computer using the supplied 6-pin FireWire cable provided. **ONLY** use the SensAble supplied FireWire cable.



Warning Make sure the connector is facing in the correct direction as shown above.

- 4 **For Windows XP Users** - After you have connected the PCC device to your computer, the Microsoft “Found New Hardware Wizard” dialog will appear. (This may take a few moments).
- 5 Select **"No, Not this time."** Click **Next**.
- 6 Select to Install from a list or specific location. Click **Next**.
- 7 When the Completing the Found New Hardware Wizard window opens, click **Finish** to complete the install process.

Running Phantom Test to Verify Setup

In this section you will run the Phantom Test application to confirm that the device is properly connected and installed.

- 1 Select **Start>All Programs>SensAble>Phantom Test**.
- 2 If the device is properly connected and installed, the Phantom Test application will open and you will be in select mode. Select your Phantom Model and click **Next**.
- 3 Gently move the Phantom arm and the Phantom test application will synchronously display the movement in the display window.

If the device is not properly connected, you will receive the following:

“The Phantom device named ‘Default Phantom’
could not initialize properly.”

If you encounter this error message first check to see that the correct device is the selected device in the Phantom Configuration tool (via the Control Panel). If you still encounter problems, reconnect the device and try again.

- 4 Next calibrate the device.
 - a For Desktop and Omni devices, follow the instructions to auto-calibrate the device.
 - b For the Premium devices, hold the Phantom in the reset position and click Space bar on your keyboard.
- 5 Once calibrated successfully, click **Done**. The device is now fully configured to work with the PCC device.

Using the Second FireWire Port on the PCC Device

The second FireWire port on the PCC device can be used to connect to:

- A Phantom Omni®, Desktop® or Premium® haptic device.
- Another PCC device in a chain. The second unit will be powered automatically by the first unit.
- A 3rd party standard FireWire device (for example, an external hard disk).

Note Using the second FireWire port may affect performance of the Phantom device.

2 DEVICE SETUP

Using the Second FireWire Port on the PCC Device

Appendix: Customer Support

Warning DO NOT OPEN THE DEVICE. Attempting to open or repair the device by anyone other than a certified authorized service center voids the manufacturer warranty and hardware maintenance contract. There are no serviceable components in the PHANTOM Communication Converter or power supply. Return to SensAble for servicing.

If you encounter any difficulties within your warranty period, you can obtain Technical Support through the three channels listed below. If you are out of warranty and do not have active maintenance, Technical Support is limited.

- If you purchased your PCC device from a distributor, please contact them first.
- SensAble Technologies Customer Support can be reached via e-mail at support@sensable.com.
- SensAble Technologies Customer Support can also be reached via telephone:
 - In the United States: 1-888-SENSABL (1-888-736-7225)
 - Outside the United States: +1-781-939-7444

Appendix: Regulatory Notices

FCC Notice (U.S. Only)

The PHANTOM Communication Converter ® haptic device is classified by the Federal Communications Commission (FCC) as a Class B digital device.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

The following information is provided on the device covered in this document in compliance with FCC regulations:

Product Name: PHANTOM Communication Converter

Model Number: 03102

Company Name: SensAble Technologies, Inc.

NOTES

Any changes or modifications to the hardware not expressly approved by SensAble Technologies could void the user's authority to operate this equipment.

This device is to be used with the SensAble-supplied power supply only. Replacement power supplies are available directly from SensAble Technologies.

Canadian Requirements:

Canadian Department of Communications Radio Interference Regulations

This digital apparatus, the PHANTOM Communication Converter, does not exceed the Class B limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications.

Cet appareil numérique, the PHANTOM Communication Converter, respecte les limites de bruits radioélectriques visant les appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

European Requirements:

EN 55022 Statement

This is to certify that the SensAble Technologies PHANTOM Communication Converter is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55022 Class B (CISPR 22).

Warning: This is a Class B product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

Achtung: Dieses ist ein Gerät der Funkstörgrenzwertklasse B. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention: Ceci est un produit de Classe B. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.