HaptX Gloves DK2
User Manual

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1   Safety Notices

High Voltage Warning: The Air Controller and Smart Compressor contain high voltage electronics. Do not disassemble, expose to liquids, or use any power supply other than those provided with your HaptX Gloves Development Kit 2 (the "DK2" or "Product").

Pressurized Air Warning: The Air Controller and Smart Compressor contain pressurized air. Do not disassemble. Use care when connecting and disconnecting Tether. If you choose to supply your own air to the Air Controller, the pressure must not exceed 50 PSI and must meet the ISO 8573-1: 7:4:0 air quality specification for oil and dryness.

Heat Warning: To reduce the possibility of heat-related injuries or of overheating the Air Controller and Smart Compressor, do not place the Air Controller and Smart Compressor directly on your lap or obstruct any air vents. Use the Air Controller and Smart Compressor only on a hard, flat surface or with the included backpack accessory. Do not allow another hard surface, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The device and the AC adapter comply with the user-accessible surface temperature limits defined by applicable safety standards.

Ensure You Are Able to Safely Use the Product: Consult with your doctor before using the Product if you have pre-existing serious medical conditions (such as a heart ailment), conditions that affect your ability to safely perform physical activities, psychiatric conditions (such as anxiety disorders or post-traumatic stress disorder), or if you are pregnant or elderly. Do not use the Product if you are sick, fatigued, under the influence of intoxicants/drugs, or are not feeling in general good health.

Ensure the Area Around You is Safe for Use of the Product: While wearing a VR headset you cannot see the world around you. The image displayed in the headset will not match the real world. Always use the Product in a clear and safe area. Do not use near stairways, large windows, heat sources, or outdoors. Clear the Product use area of people, furniture, and other things that may be obstacles or block you from freely moving around.

It is recommended that the Product be used only while under the supervision of another person who is ready to warn of hazards that may arise while the Product is being used. Examples of hazards that could arise include, but are not limited to, the tangling of a cable in a manner that presents a tripping hazard, pets entering the area where the Product is being used, and the user walking too close to a wall or other hazard.

Be Aware of the Tether and Connections: Keep in mind the location of the cables and connections running from the Air Controller and headset so that you don't trip over or pull on them while moving around the Product use area. Move your feet slowly and carefully to avoid tripping. Be sure to maintain a solid footing. Tripping over the cable or contacting obstacles could cause injury or damage.

Radio Frequency Interference: The Product emits radio waves that can interfere with the operation of nearby electronic devices. If you have a cardiac pacemaker or other implanted medical device, do not use the Product until you have consulted with your doctor or the manufacturer of your medical device. To minimize radio frequency interference, use only original manufacturer-approved accessories, or accessories that do not contain any metal. Use of non-original manufacturer-approved accessories may violate your local radio frequency exposure guidelines and should be avoided.

Always follow instructions in the User Manual. Improper use could result in serious injury or death.
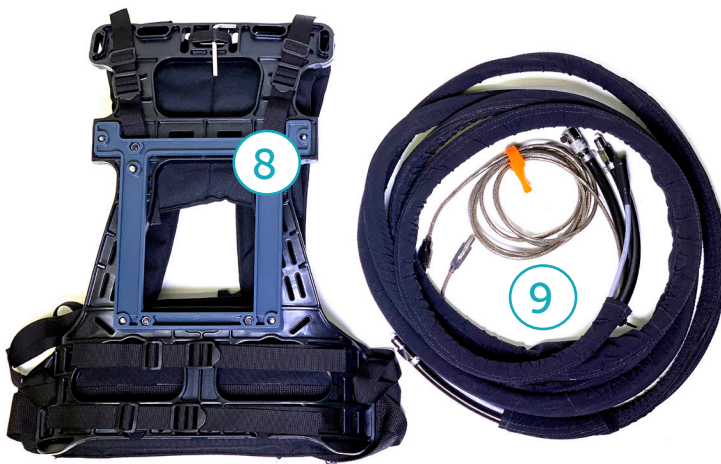
2   Case content

Case 1: Gloves and Air Controller

1. Air Controller
2. HaptX Gloves
3. Ruler
4. Air Controller Power Supply

5. Glove Gasket, Gasket Wrench, and Backpack Hex Key.
6. Setup Instructions (not pictured)
7. Hygiene Gloves (not pictured)

Case 3: Backpack Accessories

8. Backpack Accessory
9. Tether

Case 2: Smart Compressor

10. Smart Compressor
11. Smart Compressor Power Supply (not pictured)
12. Hygiene Gloves (not pictured)

3 PC Requirements

To use the HaptX Gloves DK2, your computer must meet the following system requirements:

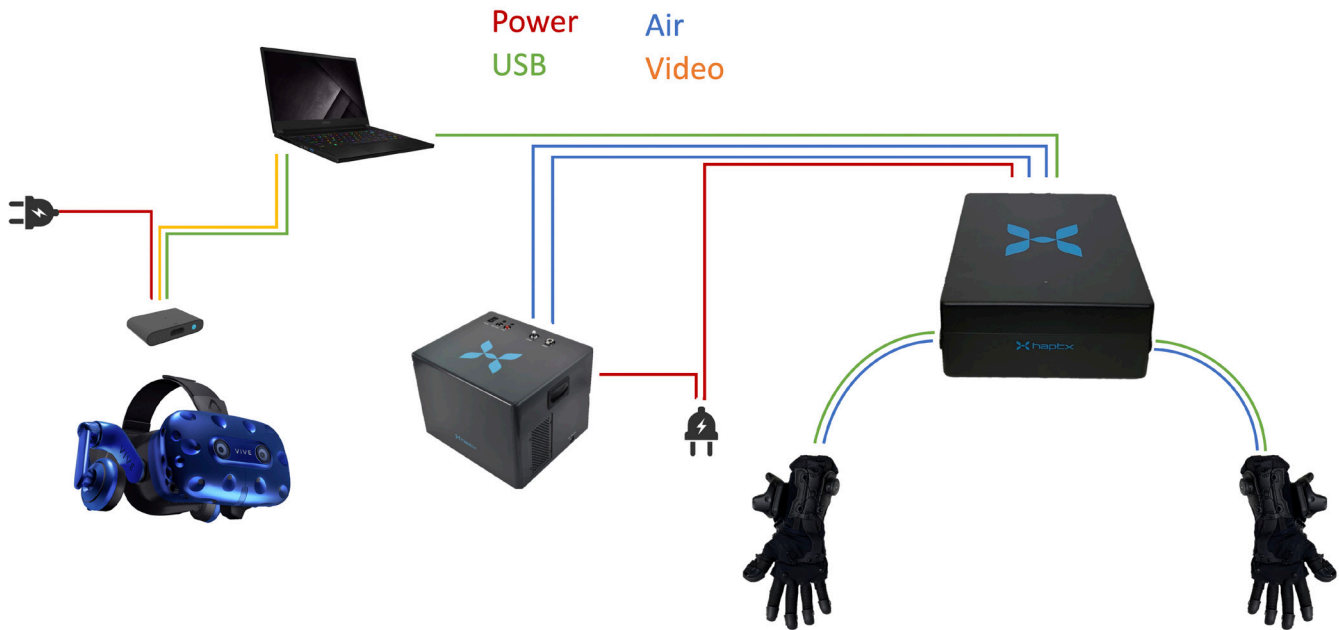| Component	Recommend system requirements	Minimum system requirements
Processor	Intel or AMD 3.5 GHz quad core processor or better	Intel Core i5-4590/AMD FX 8350 equivalent or better
GPU	Graphics card: NVIDIA GeForce™ 1070, AMD Radeon™ RX 480 or better	Graphics card: NVIDIA GeForce™ GTX 970, AMD Radeon™ R9 290 or better
Memory	16 GB RAM or more	8 GB RAM or more
Video output	DisplayPort 1.2 or newer (if using Vive Pro)	
USB port	1x USB 2.0 or newer (if using Vive Pro) 1x USB 3.0 or newer	
Operating System	Windows 10 (64 bit)	

4 Quick Start

4.1 Select Stationary or Room Scale Configuration and set up Vive

The HaptX Gloves DK2 can be used in a stationary configuration for seated and standing-only VR experiences, or in a mobile configuration for room scale VR Experiences using the Backpack Accessory. Before you start, decide which configuration you would like to use. Please follow the Vive guidelines for setting up a room scale Product use area.

If you are using the HaptX Gloves DK2 for standing-only use, we recommend using a table that is shorter than the user's waist. The following figure shows the usable workspace in the stationary configuration.

4.2 HaptX Gloves DK2 Overview

The Smart Compressor supplies power and pressurized air to the HaptX Gloves DK2. Place the Smart Compressor on the ground at the edge of the room scale VR experience area or near the table used for the stationary configuration. To prevent overheating, do not obstruct any of the vents or place in a confined space with limited air circulation.

The Air Controller regulates the pressurized air supplied to the HaptX Gloves DK2.

4.3   Attach Gloves to Air Controller

If using in the stationary configuration, attach the right Glove to the teal port and the left Glove to the white port. If using the DK2 in the room scale configuration, attach the left Glove to the teal port and the right Glove to the white port.

1. Inspect the Glove gasket for missing o-rings (there are four empty alignment holes, shown in image 1.)

2. Install the Glove gasket

3. Line up the pins on the Glove tether and attach it to the Air Controller

4. Tighten the Glove onto the Air Controller by hand, then an additional quarter turn with the Connector Wrench

5. Attach the USB cable

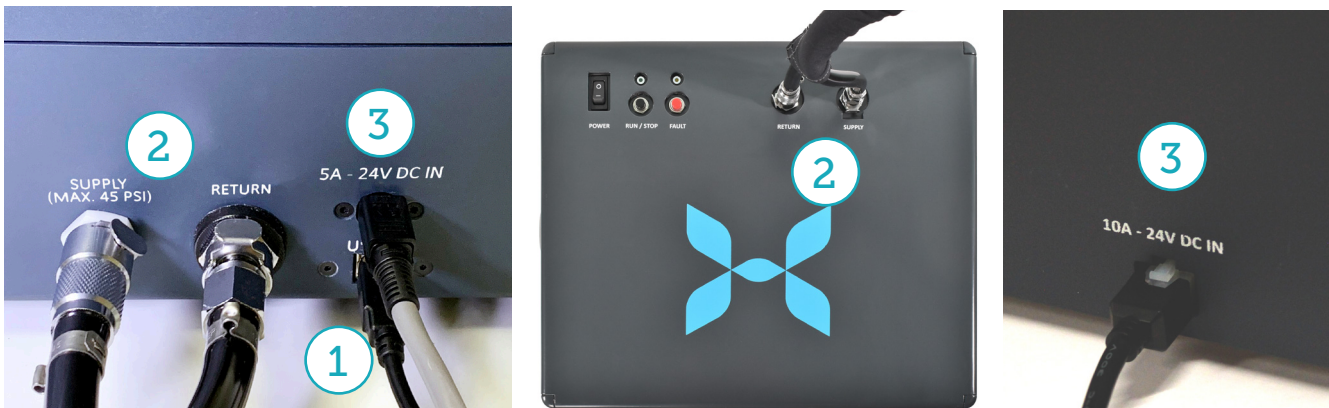## 4.4   Attach Backpack Accessory (if Room Scale Configuration)

1. Flip the Air Controller upside down.

2. Place the Backpack Accessory on top of the Air Controller and thread the 6 screws on the backpack frame by hand into the Air Controller.

3. Tighten the six screws a quarter-turn past hand-tight with the supplied 3/16" hex driver.

4. Handle the Air Controller with care when in the room scale configuration. Gently set the system down when doffing the backpack. Do not step or trip on the tether when in VR.

4.5 Attach Air Controller to Smart Compressor

Connect the Smart Compressor to the Air Controller using the supplied connector.

1. The USB port in the connector attaches the Air Controller to your PC.

2. Connect the air inlet and exhaust lines to the Smart Compressor and Air Controller. Simply insert the connector and stop when it locks into place and you hear a click. If the connector does not easily connect, press the release button to reset latch. To remove, press the release button on the side of the connector.

3. Plug in the 24-volt power adapters to the Air Controller and Smart Compressor.

4.6 Power on the Smart Compressor and Air Controller

1. On the back of the Air Controller, toggle the power switch on

2. On the top of the Smart Compressor, toggle the power switch on

3. Wait a few seconds until the LEDs alternate flashing green and yellow, indicating the Smart Compressor is in standby mode. Firmly press the black button to begin the startup sequence

4. The compressor and fans will start up and the green LED will flash while the compressor warms up

5. After 2.5 minutes, the green LED will turn solid, indicating the system is ready to be used

4.7   HTC Vive Setup

The DK2 relies on SteamVR for tracking and supports the HTC Vive Pro. For instructions and safety information related to the Vive Pro, please visit https://vive.com.

To download the Steam Client from: https://store.steampowered.com/about/, then install SteamVR from the Steam Store.

4.8   Software Setup

1. Download and install the latest version of the HaptX SDK, by logging into the HaptX support portal, using the credentials provided by HaptX Support support.haptx.com/docs/sdk/index.html

2. Create a user hand profile by opening the User Profile Utility and following the on-screen instructions. This tells the HaptX Gloves about your user hand size, skin tone, and preferred avatar so that your hand is accurately represented in VR. support.haptx.com/docs/sdk/page_user_profile_utility.html

3. Start the Airship demo support.haptx.com/docs/sdk/page_getting_started.html

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4.9   How To Don a HaptX Glove:

1. Don a hygiene glove

2. Pull on the HaptX Glove using the pull tab on the wrist and the back of hand casing

3. Seat each fingertip on your fingers by pulling down on the Glove fabric

4. Tighten the back of hand dial lacer

5. Tighten the wrist dial lacer

4.10 Doffing the HaptX Glove

Release both lacers by spinning counterclockwise. When you hear a click the lacer is released. You may need to pull the wrist cuff outward to loosen the wrist lacer. Alternate pulling on the fingers and back of hand casing to doff the Glove.

⚠️ **Warning: do not pull only on the fingertips, you may damage the Gloves.**

5 Tear-down

Before moving the Smart Compressor to a new location, manually purge the water separator before picking it up. To do this:

1.   Power on the Smart Compressor

2.   Press and hold the red button

3.   While still holding the red button, press and hold the black button

4.   Wait 10 seconds. During this period, you should hear the compressor RPM ramp up

5.   Release both buttons and power off the system

You now may power down the system, pack it up, and move it. Use the Glove wrench to remove the Gloves from the Air Controller and do not forget to store the Glove gaskets in their case.

6 Troubleshooting and Common Error Codes

The Air Controller has a status light which indicates system state:

Color Code		Description
⬛	BLACK	**Off**: The Air Controller is powered down.
🟥	RED	**Initialization**: The Air Controller is powered on and initializing drivers and underlying hardware.
⬜	WHITE (flashing)	**POST**: The Air Controller is performing power-on self-test (POST) to verify that hardware is fully functional.
🟨	YELLOW	**Idle:** The Air Controller is in low-power state. Any startup issues have been reported as power-on self-test (POST) codes. No errors which prevent functioning have been found, and the Air Controller is ready for connection to the SDK.
🟩	GREEN	**Active:** The Air Controller is nominally operative and connected to the SDK. Any tactile sensation requested from the SDK should be rendered to the Gloves.
🟪	MAGENTA	**Error:** The Air Controller has encountered an error which prevents operation. The nature of the error should be viewable in output logs via the SDK.
🟦	BLUE	**Low Inlet Pressure:** During a demo the supply pressure has dropped too low.

The Smart Compressor has two status LEDs that indicate system state:

Green LED	Yellow LED	Indicated state
⬛	⬛	Power is OFF
flashing	flashing	Power is ON, Smart Compressor system is OFF
flashing	⬛	Start-up sequence (lasts two minutes)
🟩	⬛	Normal operation
⬛	🟨	Hard Fault (compressor system shuts down)
🟩	flashing	Soft Fault (compressor system continues to run)

7   Still need help?

Web: support.haptx.com

Phone: 855-427-8943 (855-HAPTXHELP)

Email: haptx.support@advancedinput.com

8   Product Maintenance

To protect your health, you should clean the HaptX Gloves and your HMD before a new user dons them. Follow the manufacturer's guidelines for cleaning an HMD. To clean the HaptX Gloves:

1. Wipe down the exterior plastic surfaces with an alcohol-based wipe.

2. Spray the exterior and interior with a fabric disinfectant, such as Oster Disinfectant Spray.

3. Only use the provided hygiene gloves once. These hygiene gloves shrink when washed, so if you wash and reuse them, they will not fit larger hands properly.

The Smart Compressor and Air Controller require no regular maintenance.
Contact HaptX Support if either is not functioning as expected.

9   Disclaimer

This DK2 User Manual is not intended to form or modify any contract between HaptX or the provider of the Product and you applicable to your use of the Product (the "Agreement"). The use of this DK2 User Manual may be subject to such Agreement. IN NO EVENT SHALL HAPTX, ITS EMPLOYEES, CONTRACTORS, AGENTS OR SUPPLIERS BE LIABLE FOR ANY INDIRECT, CONSEQUENTIAL, OR INCIDENTAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, AND THE LIKE) ARISING OUT OF THE USE OF OR INABILITY TO USE THESE MATERIALS. Any third-party links provided herein are provided for convenience only.