

HSL KVM SWITCHES



1

WHAT IS A KVM?

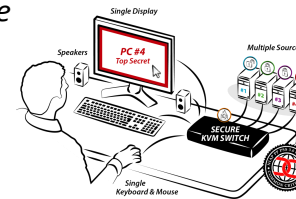
Review end user's usability challenges in multi-computer environments. Explain what is a KVM and review the KVM benefits.



2

WHAT IS A SECURE KVM?

Overview HSL's secure KVM security and product highlights.



3

KVM PRODUCT HIGHLIGHTS EXPLAINED

Product highlights explained in detail.

4

PRODUCT TABLE AND MAIN MODELS

Review the differences between models.



1

WHAT IS A KVM?

Review end user's usability challenges in multi-computer environments.

Explain what is a KVM and review the KVM benefits.



The Challenge of Working with Multiple Computers

Users whose work requires immediate access to multiple computers, like those in the government, military, and financial sectors, have a problem.

What problem?

They need to juggle between multiple sets of keyboards, mice, and displays - every time they want to change to a different computer.

It's confusing; they're never quite sure whether they're switching to the computer they want to control.

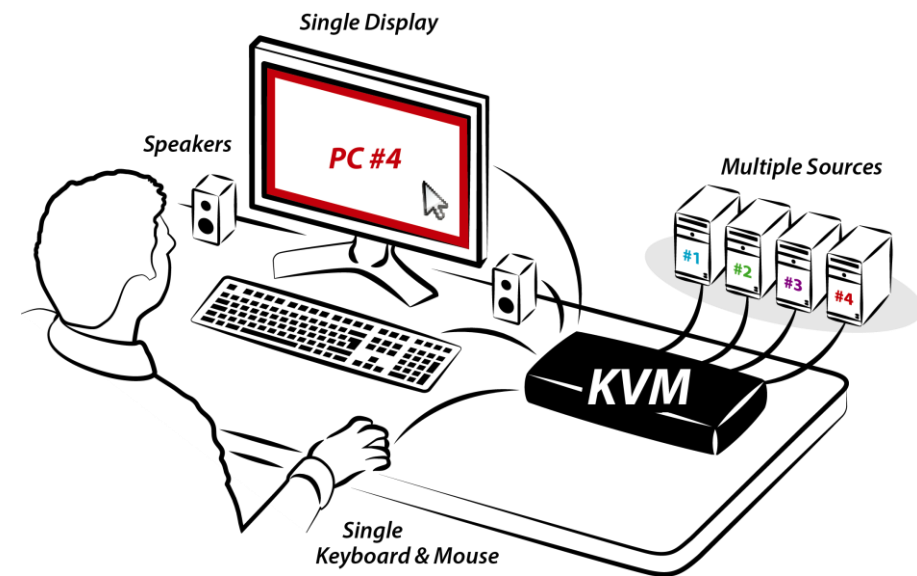
If that's not enough, the multiple sets of keyboards, mice, and displays take up valuable space on their desktop. Clutter.



What is a Keyboard-Video-Mouse (KVM) Switch?

A KVM switch shares one set of peripherals: keyboard, display, mouse, audio, and USB, between all connected computers.

So, now users only need a **single** keyboard and mouse to control **all** their computers - freeing up their desktops from the clutter of multiple peripherals



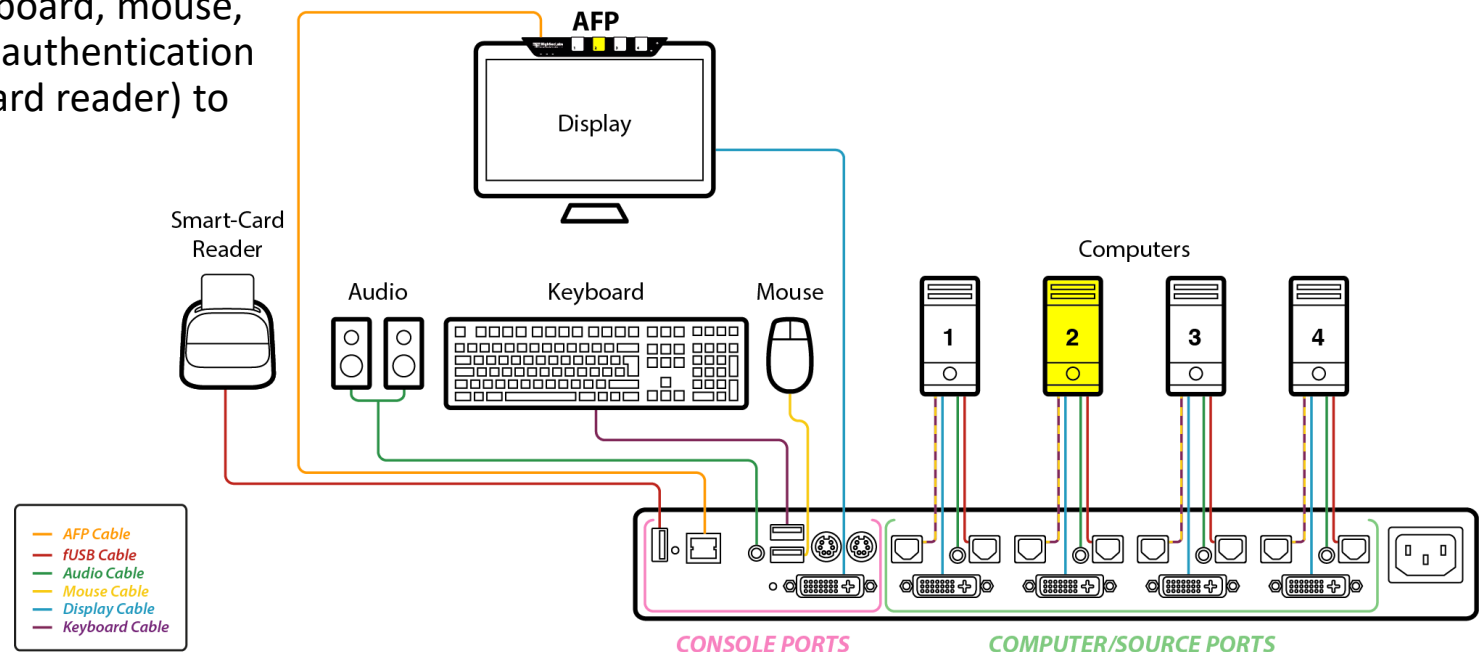
PRODUCT CONNECTION DIAGRAM

HSL KVM SWITCHES

Simple Set Up

To set up the KVM, connect:

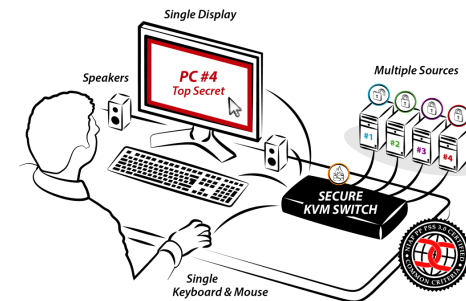
- **PCs to the computer/source ports:**
Connect each computer's display, USB, and audio cables to the KVM's corresponding computer port.
- **Peripherals to the console ports:**
Connect the monitor, keyboard, mouse, speaker/headphone, and authentication device (such as a smart-card reader) to the KVM's console ports.



2

WHAT IS A SECURE KVM?

Overview HSL's secure KVM security and product highlights.



THE NEED FOR A SECURE SOLUTION

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When is a Secure KVM Needed?

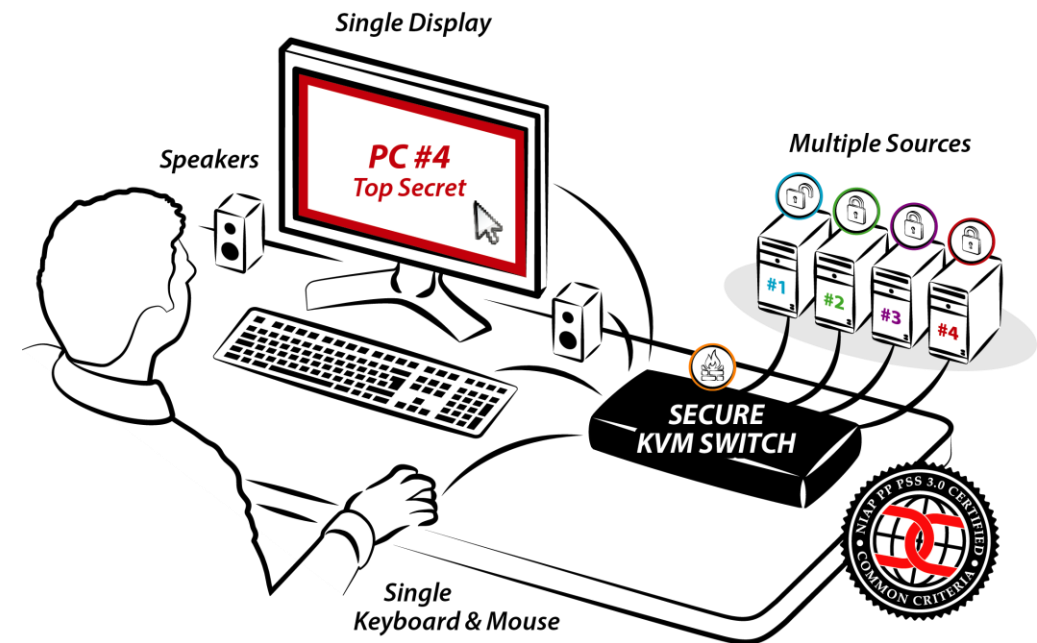
When users who connect multiple computers of different classification networks or to the Internet - through the KVM - they are at risk.

Why? Because most computer peripherals have no security mechanisms whatsoever to assure no data leaks between connected computers.

So, they're subject to data leakage, signaling, and malicious code attacks by hackers.

The National Information Assurance Partnership (NIAP) provides the official standard for sharing peripherals between computers, while keeping the highest possible data separation security.

And HSL meets the NIAP standard with its **SECURE** line of KVM switches that ensure securely sharing peripherals.



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KVM PRODUCT HIGHLIGHTS EXPLAINED

Product highlights explained in detail.

LIST OF FEATURES

HSL KVM SWITCHES

Feature	Commercial KVM	Secure KVM
Smoothly Switch Between Computers	✓	✓
Interchangeable KVM-to-KM Functionality	✓	✓
View Applications in Ultra High Definition (UHD) 4K Video Quality	✓	✓
Copy & Paste	✓	x
Super Speed USB 3.0 Ports	✓	x
Freeze Audio	✓	x
Freeze USB	✓	x
Secure Peripheral Sharing (NIAP/Common Criteria PP3.0 Certification)	x	✓
Filter USB (fUSB) Peripherals	x	✓
Freeze Filtered USB (fUSB)	x	✓
Avoid Typing Mistakes	x	✓
Auxiliary Front Panel (optional)	✓	✓

SMOOTHLY SWITCH BETWEEN COMPUTERS (VIRTUAL DISPLAY TECHNOLOGY)

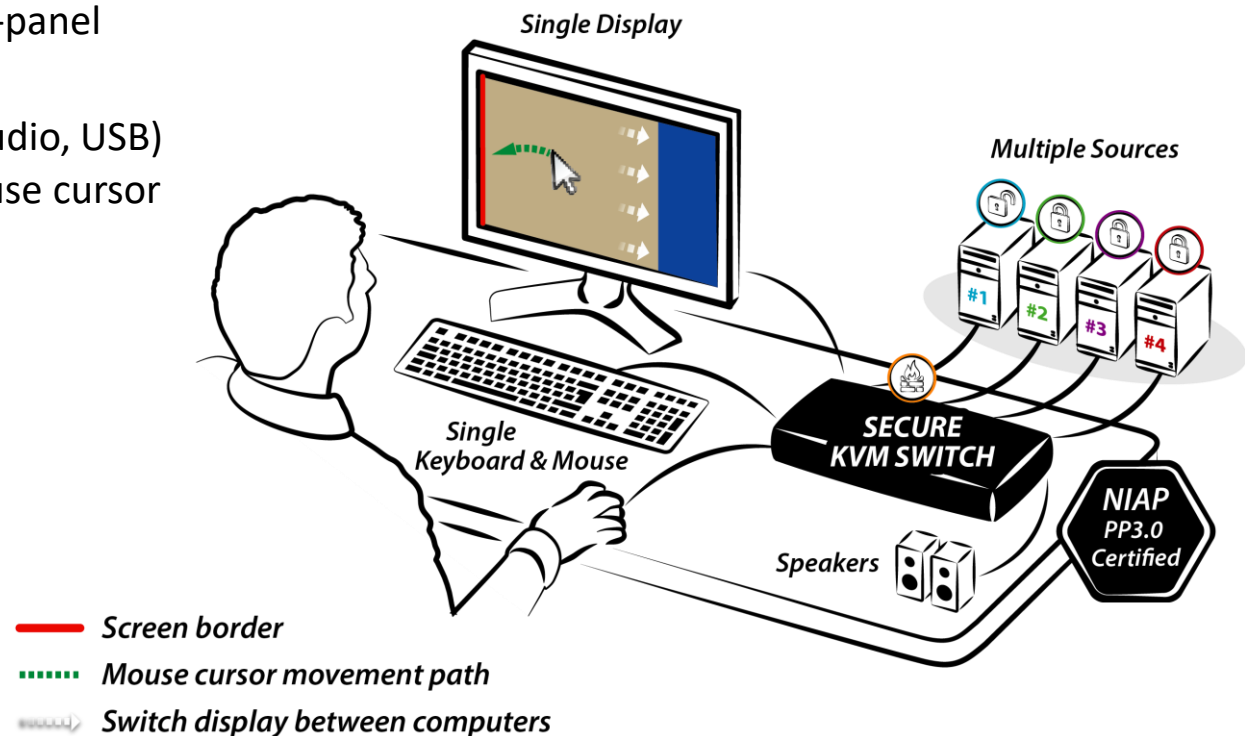
HSL KVM SWITCHES

Intuitively Switch Between Displays

The KVM's Virtual Display Technology enables users to automatically switch control from one computer to another, by sliding the mouse cursor over the computer's display border.

This eliminates the need to press the front-panel buttons.

The other shared peripherals (keyboard, audio, USB) switch to the next computer, once the mouse cursor passes the display border.



INTERCHANGEABLE KVM-TO-KM FUNCTIONALITY

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Benefit from Two Products in One

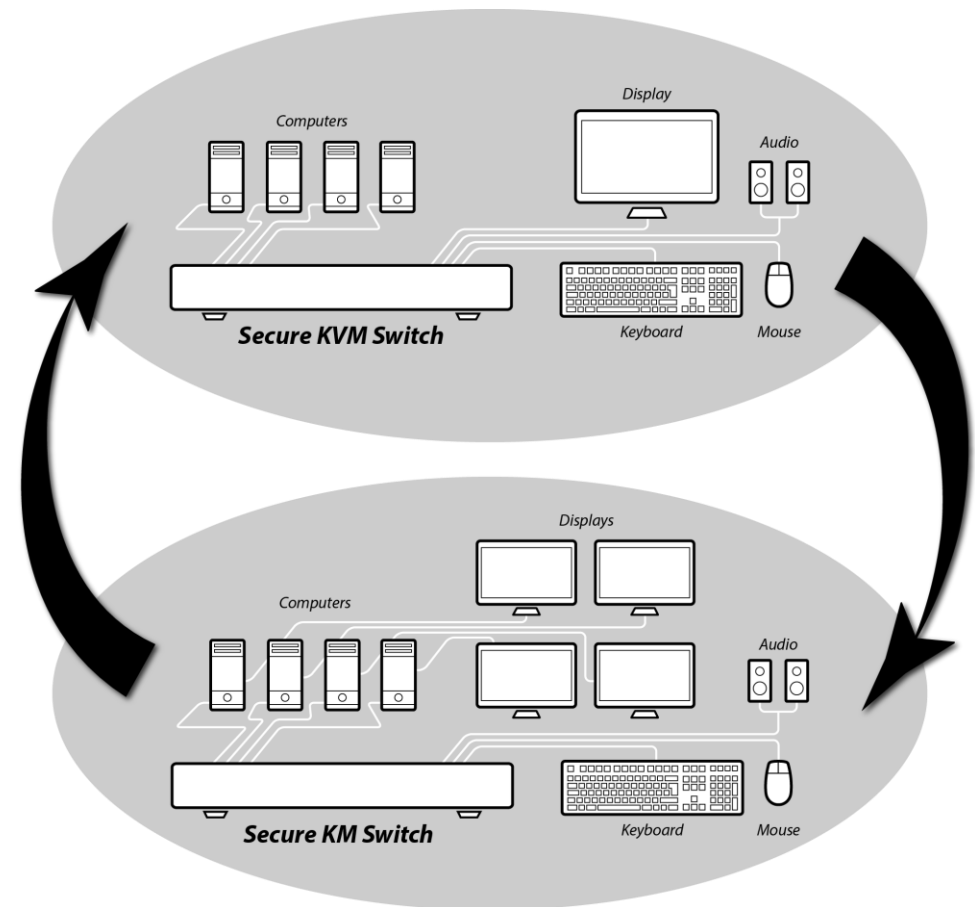
Users have the option of converting from the single-display KVM mode to the multi-screen KM mode.

So, KM mode enables:

- Viewing all computers - at the same time - as each computer is connected to a separate display
- Sharing a single keyboard and mouse set to control all computers

KM mode supports:

- Switching control from one computer to another, by sliding the mouse cursor over each computer's display border.
- Creating various display layouts. Users can align the display in many vertical (on top) and horizontal (alongside) combinations.

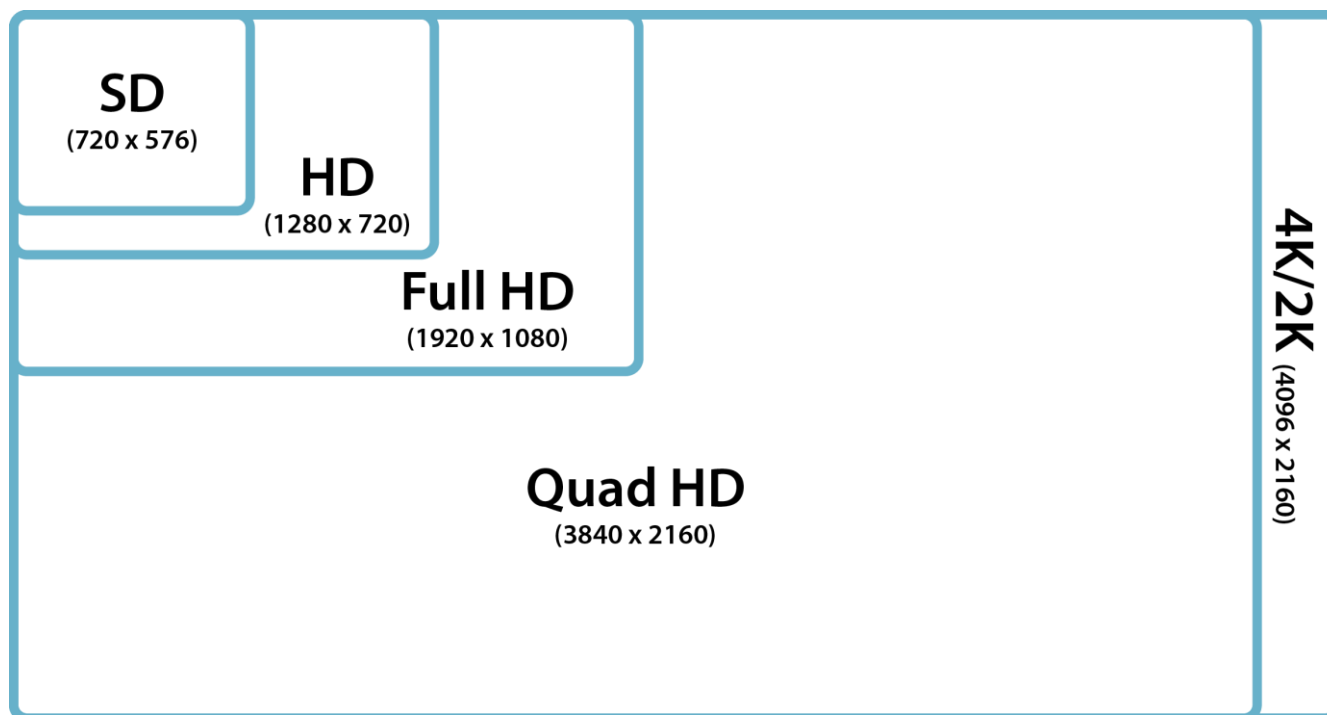


VIEW APPLICATIONS IN ULTRA HIGH DEFINITION (UHD) 4K VIDEO QUALITY

HSL KVM SWITCHES

Never Compromise on Video Quality

Run graphic-intensive, ultrahigh definition applications on all single- and dual-monitor KVM models.



*Five resolutions compared:
Standard Definition, High Definition, Full High Definition, Quad HD and 4K/2K*

Copy & Paste

The Copy & Paste feature enables:

- Transferring text and files between all the computers that are connected to the KVM, through the KVM (no network connection is needed between parties).
- Using standard copy-and-paste keyboard key combinations (**Ctrl+c/Ctrl+v**) or mouse-context menu commands.



SUPER SPEED USB 3.0 Ports

Commercial KVM Only

HSL KVM SWITCHES

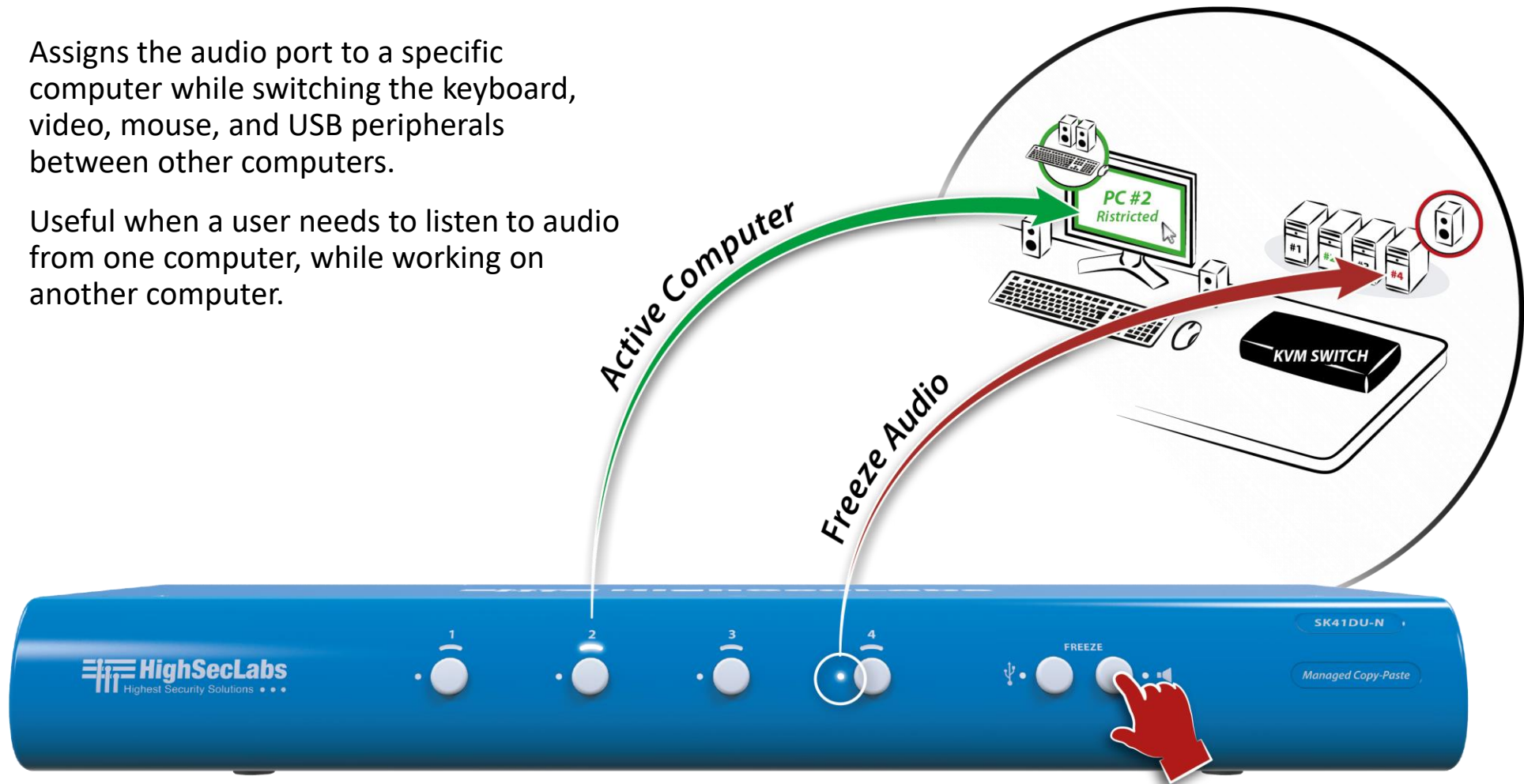
Fast Data Transfer

Transfer data and files between peripherals and computers in USB 3.0 super-speed rate



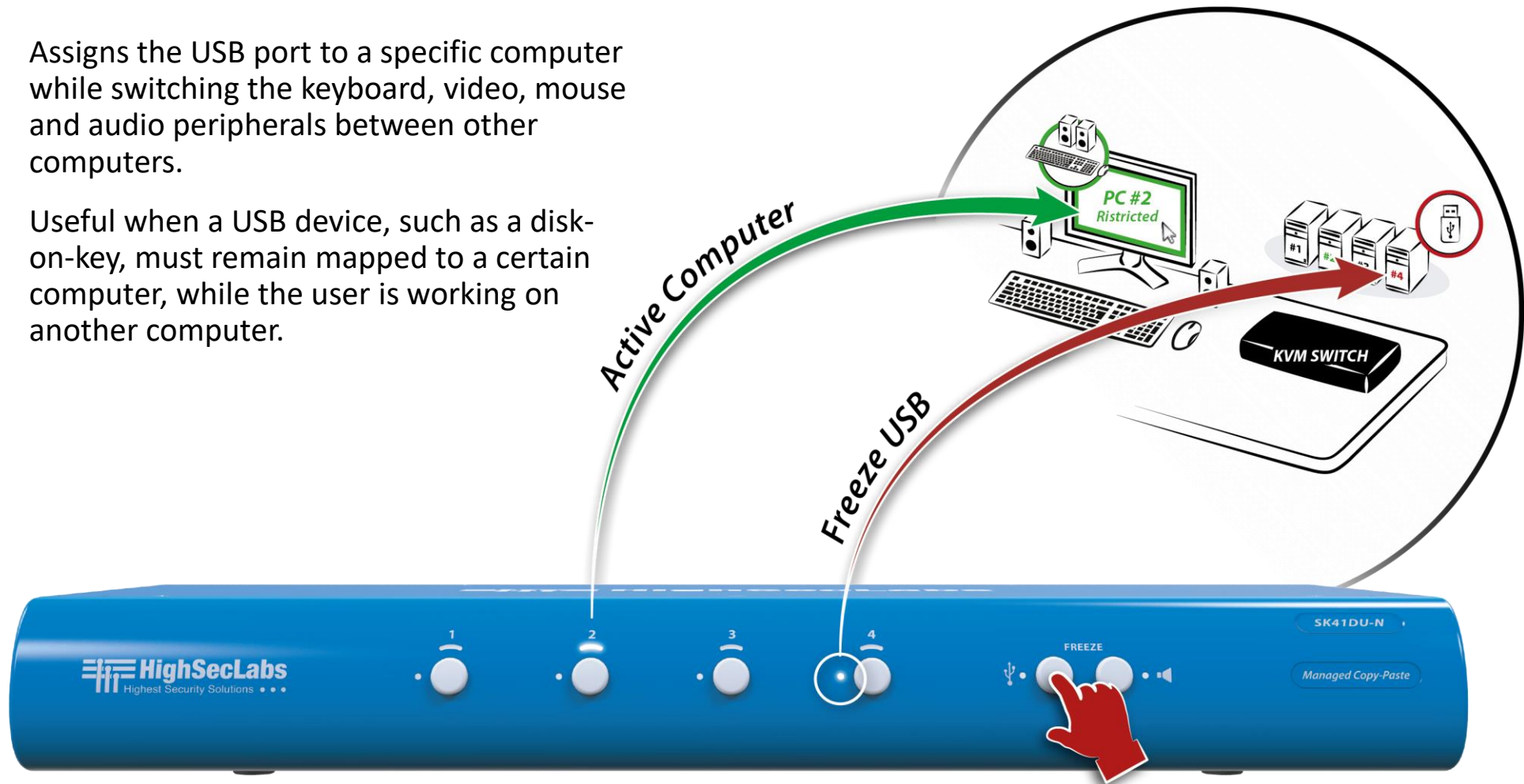
Freeze Audio

- Assigns the audio port to a specific computer while switching the keyboard, video, mouse, and USB peripherals between other computers.
- Useful when a user needs to listen to audio from one computer, while working on another computer.



Freeze USB

- Assigns the USB port to a specific computer while switching the keyboard, video, mouse and audio peripherals between other computers.
- Useful when a USB device, such as a disk-on-key, must remain mapped to a certain computer, while the user is working on another computer.



Securely Share Peripherals Between Computers of Different Classification Levels

To prevent the risk of sharing peripherals, HSL's line of secure KVMs has the following features:

- **NIAP/Common Criteria PP3.0 Certification**
HSL secure KVMs qualify to the latest NIAP Common Criteria Protection Profile version 3.0 (PP3.0) certification for Peripheral Sharing Switch (PSS) devices.
- **Securely share peripherals across different security domains**
Securely share peripherals between computers that belong to different security classifications levels, while maintaining the highest possible data separation security.
- **Prevent information leaks**
Block threats derived from sharing and switching of vulnerable, untrusted or unauthorized peripheral devices. Prevent peripheral exploits, information leaks, eavesdropping, signal transmission, computer malware, hardware, and firmware tampering by enforcing multilayered security mechanisms.

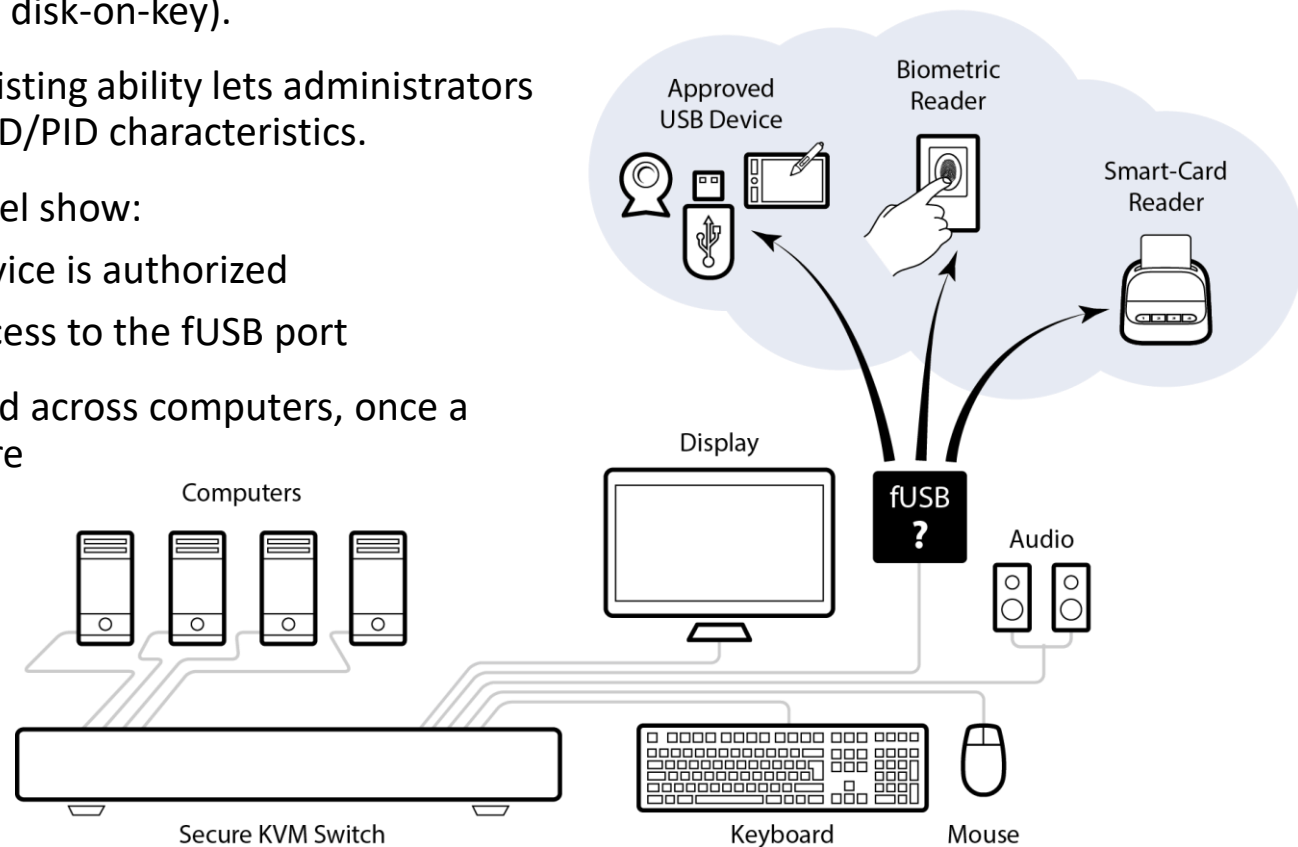


What is a Filtered USB?

A filtered USB (fUSB) is a USB port with configurable device filtering capabilities.

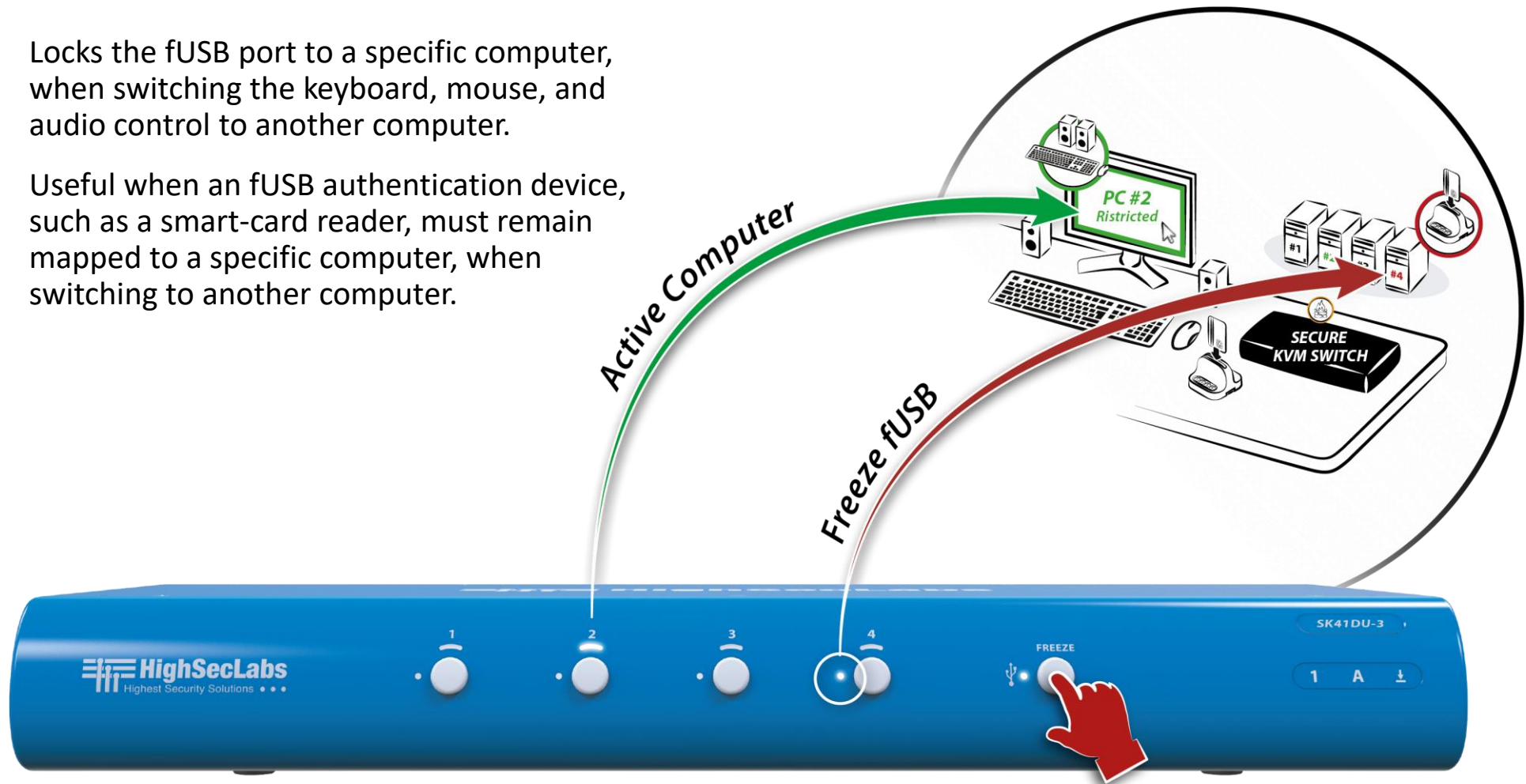
- It allows secure switching of USB smart-card and biometric authentication devices between computers, while blocking other USB devices (such as a malicious disk-on-key).
- Its configurable whitelisting and blacklisting ability lets administrators filter specific USB devices, based on VID/PID characteristics.
- LEDs on the product's front-facing panel show:
 - Whether the connected USB device is authorized
 - Which computer has current access to the fUSB port
- The fUSB port is automatically switched across computers, once a keyboard, mouse, and audio control are switched.

Authentication / Explicitly Approved USB Devices



Freeze fUSB

- Locks the fUSB port to a specific computer, when switching the keyboard, mouse, and audio control to another computer.
- Useful when an fUSB authentication device, such as a smart-card reader, must remain mapped to a specific computer, when switching to another computer.



Keyboard-lock LED Indicators

- To prevent data leakage, one-way keyboard-to-computer data flow is enforced through unidirectional optical data diodes. As a result, keyboard lock LEDs do not function.
- Without keyboard-lock LED indicators, users might experience occasional typing mistakes. For example, when typing a password while the Caps Lock key is ON.
- To help avoid typing mistakes, LEDs on the product's front-facing panel indicate the status of the keyboard lock keys (Caps Lock | Num Lock | Scroll Lock).
- Each time keyboard and mouse control switches between computers, the LED's status is updated automatically to reflect the state of the lock keys on the currently active computer.



AUXILIARY FRONT PANEL (Optional)

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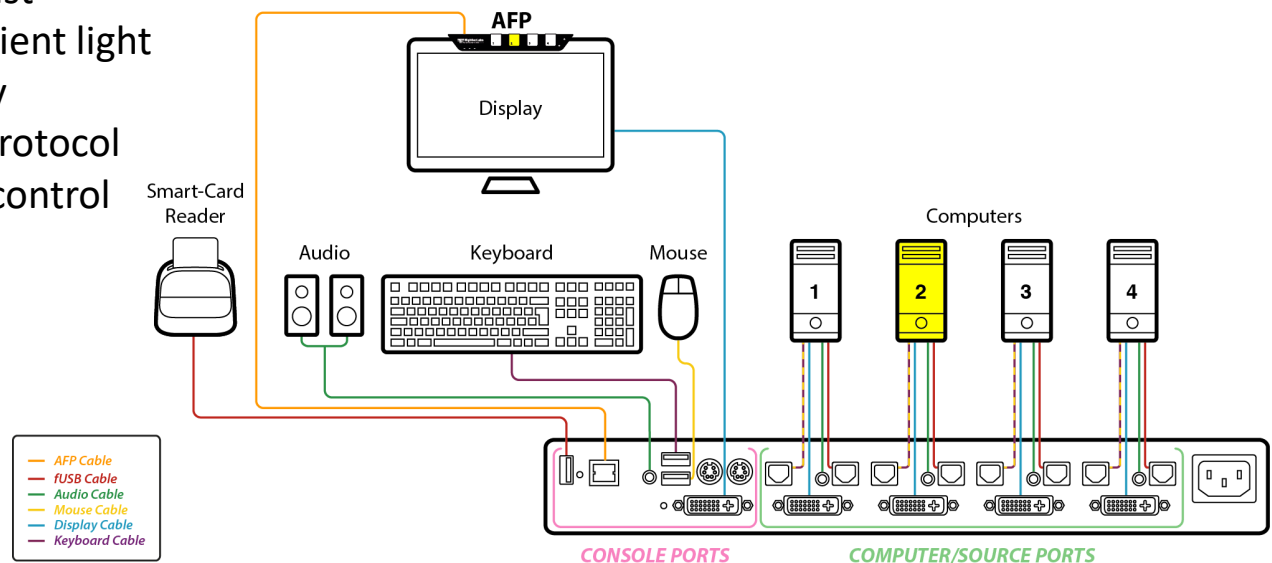
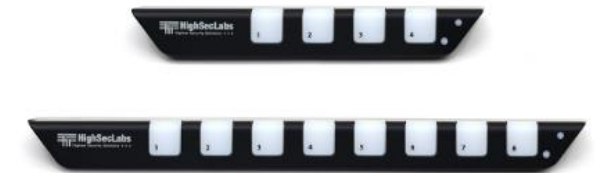
Auxiliary Front Panel

When the KVM is out of reach, such as when installed under a desk or in a cabinet, it causes a problem. The user doesn't have access to the buttons for selecting and viewing the active PCs.

The small, attachable Auxiliary Front Panel (AFP) solves this problem, by providing direct control of the KVM, right from the desktop or monitor.

The AFP provides several benefits:

- Push buttons, like those on the KVM, for easy channel switching, combined with LEDs that show the active PC
- Dimmer controls that let the user adjust LED light intensity, for changes of ambient light
- Simply mounts on a desktop or display
- Communicates via a standard RS232 protocol for easy and intuitive installation and control



4

PRODUCT TABLE AND MAIN MODELS

*Review the
differences
between
models.*



KVM PRODUCTS LIST TABLE

Commercial Models

HSL KVM SWITCHES

Model	<i>SK 21D-N SK 21H-N SK 21P-N</i>	<i>DK 22D-N DK 22H-N DK 22P-N DK 22PD-N</i>	<i>SK 41DU -N SK 41HU-N SK 41PU-N</i>	<i>DK 42DU -N DK 42HU-N DK 42PU-N DK 42PDU-N</i>	<i>SK 81DU -N SK 81HU-N SK 81PU-N</i>	<i>DK82HU-N DK 82DU -N DK 82PU-N</i>
# of sources (inputs)	2	2	4	4	8	8
# of projected displays (outputs)	1	2	1	2	1	2
Keyboard & mouse ports		USB		USB		USB
USB 3.0 Port		x		✓		✓
Video Source		DVI-I HDMI DisplayPort		DVI-I HDMI DisplayPort		DVI-I HDMI DisplayPort
Computers (inputs) video	Up to 4K-2K Ultra HD Resolutions (3840 X 2160 pixels)					
Console (outputs) video	Up to 4K-2K Ultra HD Resolutions (3840 X 2160 pixels)					



KVM PRODUCTS LIST TABLE

Secure Models

HSL KVM SWITCHES

Model	<i>SK 21D-3</i> <i>SK 21H-3</i> <i>SK 21P-3</i>	<i>DK 22D-3</i> <i>DK 22H-3</i> <i>DK 22P-3</i> <i>DK 22PD-3</i>	<i>SK 41D-3/DU -3</i> <i>SK 41H-3/HU-3</i> <i>SK 41P-3/PU-3</i>	<i>DK 42D-3/DU -3</i> <i>DK 42H-3/HU-3</i> <i>DK 42P-3/PU-3</i>	<i>SK 81DU -3</i> <i>SK 81HU-3</i> <i>SK 81PU-3</i>	<i>DK82HU-3</i> <i>DK 82DU -3</i> <i>DK 82PU-3</i>
# of sources (inputs)	2	2	4	4	8	8
# of projected displays (outputs)	1	2	1	2	1	2
Keyboard & mouse ports	USB		USB & PS/2		USB & PS/2	
USB Peripheral Port (fUSB)	x		✓ (U)		✓	
Video Source	DVI-I HDMI DisplayPort		DVI-I HDMI DisplayPort		DVI-I HDMI DisplayPort	
Computers (inputs) video	Up to 4K-2K Ultra HD Resolutions (3840 X 2160 pixels)					
Console (outputs) video	Up to 4K-2K Ultra HD Resolutions (3840 X 2160 pixels)					





THANK YOU

For more information, please visit www.highseclabs.com