Models:

SK21x-3 / DK22x-3 – Secure 2-Port DVI-I / HDMI / DP Video KVM Switch, PP 3.0
SX41x-3 / DX42x-3 – Secure 4-Port DVI-I / HDMI / DP Video KVM Switch, PP 3.0
SX81x-3 / DX82x-3 – Secure 8-Port DVI-I / HDMI / DP Video KVM Switch, PP 3.0

HDC14467 Rev. 1.2

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INTRODUCTION

HSL Secure KVM Switches

Simplify and secure user experience when working with multiple computers.

Keyboard Video Mouse (KVM) switch offered by HSL allows secure sharing of keyboard, video, mouse, audio and USB peripherals between multiple computers while maintaining the highest isolation.

Obviate the need for purchasing and installing dedicated, per-computer peripheral sets.

This guide instructs how to install, configure and operate a secure HSL KVM switch.

This guide refers to the following models:

SK21D-3 – Secure 2-Port DVI-I Video KVM Switch, PP 3.0
SK21H-3 – Secure 2-Port 4K HDMI Video KVM Switch, PP 3.0
SK21P-3 – Secure 2-Port DP to HDMI Video KVM Switch, PP 3.0
SK21PH-3 – Secure 2-Port 4K DP/HDMI to DP/HDMI Video KVM Switch, PP 3.0
SK21PP-3 – Secure 2-Port DP to DP Video KVM Switch, PP 3.0
DK22D-3 – Secure 2-Port DVI-I Video DH KVM Switch, PP 3.0
DK22H-3 – Secure 2-Port 4K HDMI Video DH KVM Switch, PP 3.0
DK22P-3 – Secure 2-Port DP to HDMI Video DH KVM Switch, PP 3.0
DK22PD-3 – Secure 2-Port DVI and DP Video DH KVM Switch, PP 3.0
DK22PH-3 – Secure 2-Port 4K DP/HDMI to DP/HDMI Video DH KVM Switch, PP 3.0
DK22PP-3 – Secure 2-Port DP to DP Video DH KVM Switch, PP 3.0
DK22PPD-3 – Secure 2-Port DP to DP and DVI Video DH KVM Switch, PP 3.0
SK41D-3 – Secure 4-Port DVI-I Video KVM Switch, PP 3.0
SK41DU-3 – Secure 4-Port DVI-I Video KVM Switch w/fUSB, PP 3.0
SK41H-3 – Secure 4-Port 4K HDMI Video KVM Switch, PP 3.0
SK41HU-3 – Secure 4-Port 4K HDMI Video KVM Switch w/fUSB, PP 3.0
SK41P-3 – Secure 4-Port DP to HDMI Video KVM Switch, PP 3.0
SK41PU-3 – Secure 4-Port DP to HDMI Video KVM Switch w/fUSB, PP 3.0
SK41PH-3 – Secure 4-Port 4K DP/HDMI to DP/HDMI Video KVM Switch, PP 3.0
SK41PP-3 – Secure 4-Port DP to DP Video KVM Switch, PP 3.0
SK41PPU-3 – Secure 4-Port DP to DP Video KVM Switch w/fUSB, PP 3.0
DK42D-3 – Secure 4-Port DVI-I Video DH KVM Switch, PP 3.0
DK42DU-3 – Secure 4-Port DVI-I Video DH KVM Switch w/fUSB, PP 3.0
DK42H-3 – Secure 4-Port 4K HDMI Video DH KVM Switch, PP 3.0
DK42HU-3 – Secure 4-Port 4K HDMI Video DH KVM Switch w/fUSB, PP 3.0
DK42P-3 – Secure 4-Port DP to HDMI Video DH KVM Switch, PP 3.0
DK42PU-3 – Secure 4-Port DP to HDMI Video DH KVM Switch w/fUSB, PP 3.0
DK42PHU-3 – Secure 4-Port DP/HDMI to DP/HDMI Video DH KVM Switch w/fUSB, PP 3.0
DK42PP-3 – Secure 4-Port DP to DP Video DH KVM Switch, PP 3.0
DK42PPU-3 – Secure 4-Port DP to DP Video DH KVM Switch w/fUSB, PP 3.0
SK81DU-3 – Secure 8-Port DVI-I Video KVM Switch w/fUSB, PP 3.0
SK81HU-3 – Secure 8-Port 4K HDMI Video KVM Switch w/fUSB, PP 3.0
SK81PPU-3 – Secure 8-Port DP to DP Video KVM Switch w/fUSB, PP 3.0
DK82DU-3 – Secure 8-Port DVI-I Video DH KVM Switch w/fUSB, PP 3.0
DK82HU-3 – Secure 8-Port 4K HDMI Video DH KVM Switch w/fUSB, PP 3.0
DK82PPU-3 – Secure 8-Port DP to DP Video DH KVM Switch w/fUSB, PP 3.0

Installing the KVM

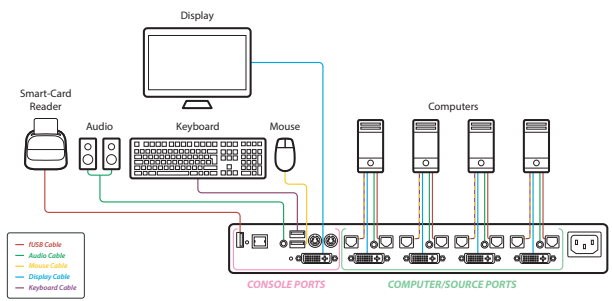
General

- Verify that all peripherals and computers are turned off prior to connecting them to the product.
- The KVM's back panel is divided into Console Ports and Computer Ports sections.
  - Connect peripherals which are due to be shared by the KVM to the Console ports.
  - Connect each computer that requires access to the shared peripherals to a Computer port group.
  - Make sure that every computer is connected to a separate Computer port group.
  - Computer port group numbers are represented by push buttons on the product's front panel.
  - Switch peripherals between computers by pressing the push buttons on the product's front panel.

Step 1 – Connect peripherals to the KVM Console ports:

- **Keyboard:** Connect either a USB or PS/2 keyboard to the corresponding KVM console keyboard port.
- **Video:** Connect the monitor cable to the KVM console video port.
- **Mouse:** Connect either a USB or PS/2 mouse to the corresponding KVM console mouse port.
- **Audio peripherals:** Connect headphones / speakers to the KVM console audio-out port.
- **USB peripherals:** Connect USB peripherals to the KVM console fUSB port.

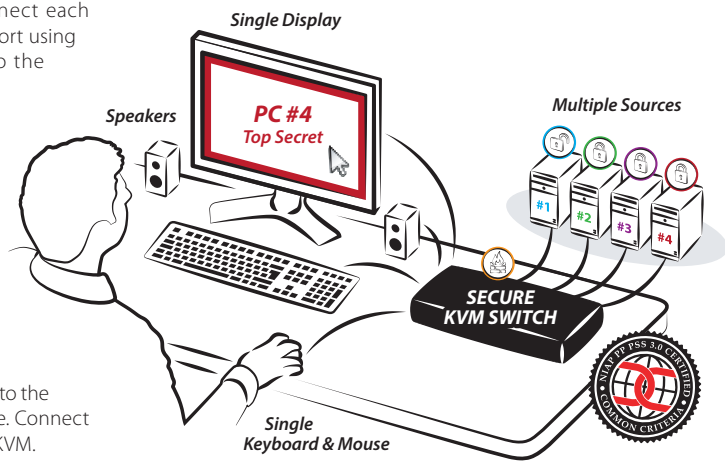
Note: Authentication devices such as smartcard and biometric readers are enabled by default, other devices must be explicitly whitelisted – for further information please refer to the KVM Administrator's guide.



INSTALLATION

Step 2 – Connect computers to the KVM Computer ports:

- **Computer keyboard & mouse connection:** Connect each computer to the KVM keyboard & mouse computer port using a USB A to USB B cable. Connect the USB A end to the computer and the USB B end to KVM.
- **Computer video connection:** Connect each computer to the KVM computer video port using the corresponding video cable (VGA/HDMI/DVI/DP).
- **Computer audio connection:** Connect each computer to the KVM audio-in port using an audio cable. Connect one end of the cable to the computer's audio-out port using the 1/8" (3.5mm) stereo plug. Connect the other end of the audio cable to the KVM audio-in computer port.
- **Computer USB peripherals:** Connect each computer to the KVM fUSB computer port using a USB A to USB B cable. Connect the USB A end to the computer and the USB B end to KVM.



Note: 4 channel product illustrations shown throughout this manual are applicable to other KVM models.

INSTALLATION

Step 3 – Power ON your system:

- **Power ON the monitor:** Make sure that the monitor is turned ON prior to powering ON the KVM.
- **Power ON the system:** Connect all peripherals and computers to the KVM prior to powering it up. Power ON the KVM by plugging it to the AC wall outlet. By default, after product power-up, the active channel will be computer #1, indicated by the applicable front panel push button LED lit.

Note: Power ON self-test: As the product powers-up it performs a self-test procedure. In case of self- test failure for any reason, including jammed buttons, the product will be Inoperable. Self-test failure will be indicated by abnormal LED behavior – for further information please refer to the KVM setup guide.

Step 4 – Reset to Factory Defaults

Reset to factory defaults clears the device settings and restores the device to its original configuration.

- System reset, clears behavioral characteristics such as mouse settings and display presets. Type { **L CTRL | L CTRL | F11| r** } key combination.
- Complete reset: clears all device settings and resets to factory defaults. From the Terminal menu select the "Reset to Factory Defaults" option (refer to terminal mode guide).

Important Notes:

1. Always use the **left control key (CTRL)** unless otherwise specified.
2. Keyboard shortcut keys are to be pressed sequentially
3. Do not use the numeric keypad for toggling shortcuts unless otherwise specified.
4. ALL KEYBOARD SHORTCUTS REFER TO QWERTY KEYBOARDS. In case a non-qwerty keyboard is in use, keep using the QWERTY layout.

Operating the KVM

Front Panel Push-Buttons

- Following power up, the default channel is #1.
- Select any other channel by pressing the appropriate front panel push button.
- The mouse cursor will be positioned at the center of the selected computer display.
- The currently selected channel is indicated by the illumination of the appropriate push-button.

Filtered USB Port (fUSB) Operation

- This product is equipped with a fUSB port which by default accepts only USB authentication devices (smart card / biometric readers).
- When a legitimate USB device is connected to the fUSB console port the fUSB status LED on the front panel is illuminated with steady GREEN.
- When a non-legitimate USB device is connected to the fUSB console port the fUSB status LED on the front panel is illuminated with steady RED.
- Once switching between channels, for example from channel #1 to channel #3, the USB device which is connected to the fUSB port is automatically switched accordingly. This is indicated by channel #3 fUSB LED turning steady GREEN.
- When switching to a channel that has no USB fUSB connection, the fUSB Port remains mapped to the last channel that had a fUSB connection.
- Press the freeze USB button on the front panel to assign the fUSB port to a specific computer. Freeze USB prevents switching the fUSB port while the keyboard, video, mouse and audio peripherals are switched between computers. Freeze USB is useful for various scenarios, for instance, when a USB smart card reader must remain mapped to a certain computer.

OPERATION

Smoothly switch between computers (Virtual Display Technology)

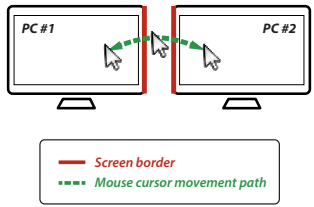
- Automatically switch control from one computer to another by dragging the mouse cursor over the computer's display border.
- Shared peripherals (Keyboard, Audio, USB) switch to the next computer without having to press any buttons once the mouse is passing the display border.

To activate VDT mode:

- Change the mouse mode to Absolute by typing**L CTRL | L CTRL | F11 | c**
- Enable Video Follow Mouse by typing **L CTRL | L CTRL | f**

Switch between computers:

- Press the front panel buttons to manually switch control from one computer to another.
- Use cursor navigation switching (VDT) to automatically switch between computers by dragging the mouse cursor over the computer's display border. Once the mouse is passing the display border, shared peripherals (Keyboard, Audio, USB) switch to the next computer without having to press any buttons.



To deactivate VDT mode:

- Change the mouse mode to Relative by typing **L CTRL | L CTRL | F11 | b**
- Disable Video Follow Mouse by typing **L CTRL | L CTRL | f**

Notes:

- VDT is disabled by default. Resetting the product to factory defaults, disables VDT.
- Multi-monitor computers require driver installation, currently available only for Windows (http://highseclabs.com/support/downloads/?rid=19).

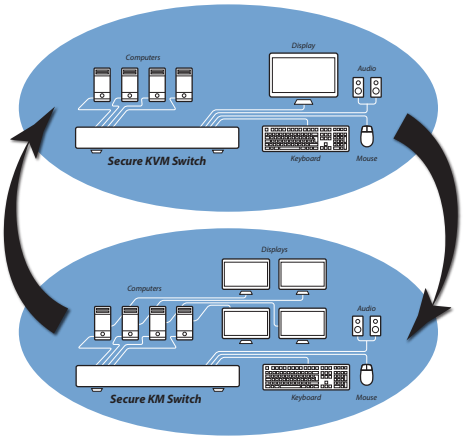
OPERATION

Interchangeable KVM-to-KM Functionality

- In KVM mode (default) one display, keyboard, mouse, USB and audio peripheral set is shared between all computers.
- In KM mode each computer is connected to a separate display while keyboard and mouse are shared.

To change from KVM to KM mode:

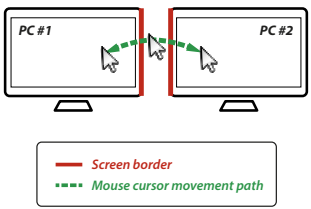
- Disconnect the Display from the KVM Console Port.
- Connect each computer directly to a separate display while keeping the keyboard, mouse, USB and audio peripherals connected to the KVM.
- Change the mouse mode to Absolute by typing **L CTRL | L CTRL | F11 | c**



OPERATION

Switch between computers in KM mode:

- Press the front panel buttons to manually switch control from one computer to another.
- Use cursor navigation switching (VDT) to automatically switch between computers by dragging the mouse cursor over the computer's display border. Once the mouse is passing the display border, shared peripherals (Keyboard, Audio, USB) switch to the next computer without having to press any buttons.



To change from KM to KVM mode:

- Connect a Display to the KVM Console Port.
- Connect each computer to its corresponding KVM Computer Video Port.
- Change the mouse mode to Relative by typing **L CTRL | L CTRL | F11 | b**

Note: Resetting the product to factory defaults, disables the KM mode.

OPERATION

Keyboard shortcut options

#	Action Description	Keyboard
1	**Toggle between mouse modes**	(Absolute) - **L CTRL | L CTRL | F11 | c** (Relative) - **L CTRL | L CTRL | F11 | b**
2	**System Reset to factory defaults**	**L CTRL | L CTRL | F11 | r**
3	**Enter Terminal-Mode**	**L CTRL | R CTRL | t**
4	**Video Follow Mouse (toggle ON/OFF)***	**L CTRL | L CTRL | f**

* (Use in conjunction with Absolute mouse mode to switch sources by moving the mouse accross the display border - in KVM mode)

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