

Mini-Matrix Switches



Models:

SX22x-N – 2P to 2P DVI / HDMI Video KVM Mini-Matrix w/sUSB
SX42xU-N – 4P to 2P DVI / HDMI Video KVM Mini-Matrix w/sUSB
SX82DU-N – 8P to 2P DVI Video KVM Mini-Matrix w/sUSB
SX82PHU-N - 8P to 2P DP/HDMI Video KVM Mini-Matrix w/sUSB

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INTRODUCTION

HSL Mini-Matrix

Optimize user experience when working with multiple computers. View and control two computers at the same time whilst effortlessly sharing keyboard, video, mouse, audio and USB devices.

The Mini-Matrix KVM switch offered by HSL provides increased productivity in challenging multi-computer environments where users are required to view and interact with several computers simultaneously.

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

This guide refers to the following models:

SX22D-N – 2P to 2P DVI-D Video KVM Switch

SX22H-N – 2P to 2P HDMI Video KVM Switch

SX42DU-N – 4P to 2P DVI-D Video KVM Switch w/sUSB

SX42HU-N – 4P to 2P 4K HDMI Video KVM Switch w/sUSB

SX82DU-N – 8P to 2P DVI-D Video KVM Switch w/sUSB

SX82PHU-N – 8P to 2P DP/HDMI Video KVM Switch w/sUSB

INSTALLATION

Installing the Mini-Matrix

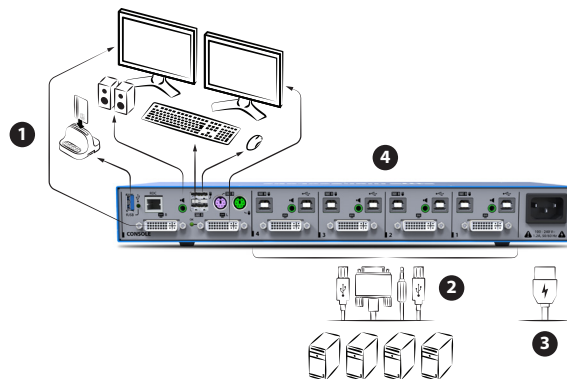
Step 1 – Cable Installation

1. Connect console port peripherals:

- Connect video displays to the Mini-Matrix primary and secondary display ports.

Note: it is highly recommended to use identical primary and secondary display models. EDID information is taken from the primary console display port (#1) and sent to all connected computers. In case of using non-identical displays, connect the smaller display to the primary console display port.

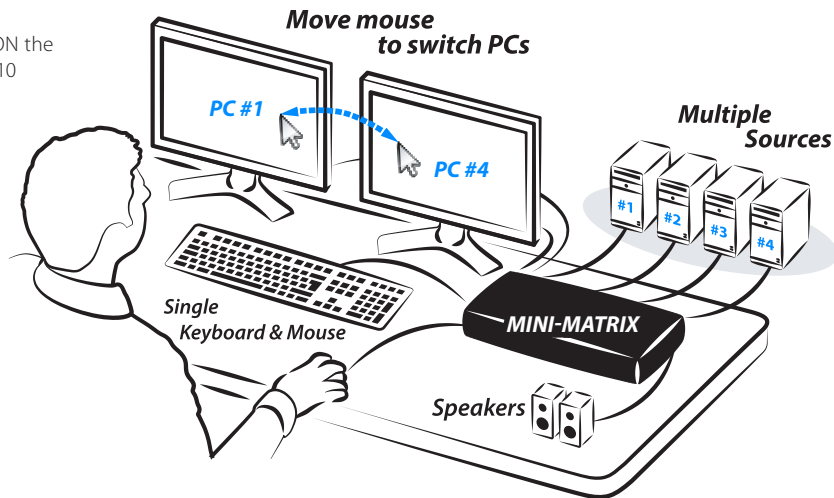
- Connect keyboard, mouse and audio peripherals to the Mini-Matrix console ports. These will be shared between all sources.
 - USB peripherals: Connect USB peripherals to the Mini-Matrix console USB port.
- #### 2. Computer/Source channel ports:
- For each source, connect the video, keyboard, mouse, USB and audio cables to the Mini-Matrix source ports.
- #### 3. Dual screen support:
- Download and install HSL's Multi Display Driver on source computers that have multiple screens (currently available only for Windows)(<http://highseclabs.com/dl.php?fid=446>).



INSTALLATION

Step 2 – Power ON the Mini-Matrix

- Turn ON all the PCs.
- Connect the power supply and power ON the Mini-Matrix (approximate boot time is 10 seconds).
- The Mini-Matrix boots into duplicate-mode, where source number 1 is presented on both displays.



Note: In case no picture is presented after powering ON, switch between the primary and secondary displays, or, connect an alternate display, or perform a reset to factory default.

INSTALLATION

Step 3 – 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.



OPERATION

Operating the Mini-Matrix

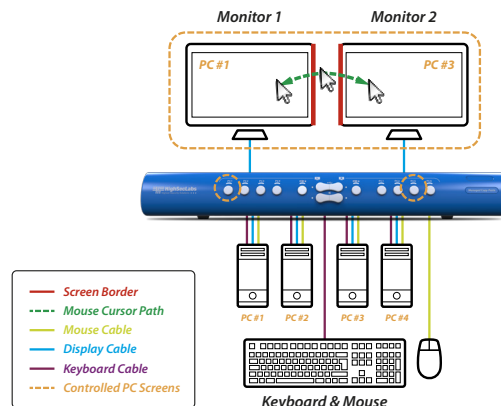
Step 1 – Display & Control Options

Display & Control options define which source to display and control on each screen. Source selection is done through the source selection buttons on the front panel or via the DCU (dedicated control unit) port.



- Use the Source Selection Panels to choose which source to display on each screen.
- The left panel controls which source to display on the Primary display while the right panel controls the secondary display.
- For example, as seen in the illustration, when #1 is selected on the Primary Panel and #3 is selected on the Secondary panel, the selected sources will be presented accordingly.
- A source can be duplicated, by selecting its number on both panels.
- By default, Mouse, Keyboard, Audio and USB peripherals follow the display association.
- Independently switch the Video / USB / Audio / Keyboard & Mouse ports between computers
 - Use the front-panel push buttons to independently switch the Video / USB / Audio / Keyboard & Mouse ports between the primary and secondary computers.

- Useful for various scenarios, for instance:
 - When a USB disk on key must remain mapped to a certain computer while the keyboard, video, mouse and audio are switched to another computer.
 - When a user has to listen to audio originating from one computer while working on another computer.
- Additional options are described ahead under the advanced presets section.



OPERATION

Step 2 – Relative vs. Absolute Mouse

By default the Mini-Matrix is setup with relative mouse settings.

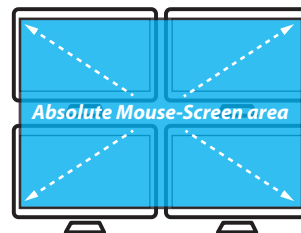
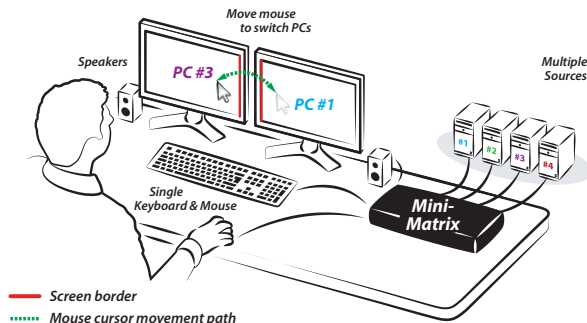
- **Relative mouse** (default) confines the mouse movement to the screen of each selected computer. To switch the mouse between sources, use the front panel push buttons.
- **Absolute mouse** (VDT) allows switching the mouse between sources by moving the mouse cursor across display borders.

Cursor Navigation (Virtual Display Technology - VDT):

- With cursor navigation the user can move from one highly isolated computer system to another by simply moving the mouse cursor across display borders.
- Once the cursor crosses the display border, Keyboard, Mouse, Audio and USB mapping switch to the computer that is connected to that display.
- No need to push any buttons.

How to define mouse state

- Use the key combination { **L CTRL** | **L CTRL** | **F11** | **c** } to enable absolute mouse (VDT).
- Use the key combination { **L CTRL** | **L CTRL** | **F11** | **b** } to enable relative (this is the default mode).



OPERATION

Step 3 – Predefined Display Layouts (Presets)

What are presets?

- Presets reflect the layout and borders of computer displays to the Mini-Matrix.
- The Mini-Matrix includes 6 predefined presets, described below.

What are presets for?

- Presets allow the Mini-Matrix to correctly associate the mouse with each source based on the physical display positioning and the respective number of displays which are associated with each source.
- Presets enable cursor navigation switching which allows the user to switch control between PCs by moving the mouse cursor across display borders.

How to switch between presets

- Use the key combination { **L CTRL | L CTRL | F11 | F1-to-F6** } to toggle between presets.

Enable absolute-mouse prior to working with presets, type:
{ **L CTRL | L CTRL | F11 | c** }.

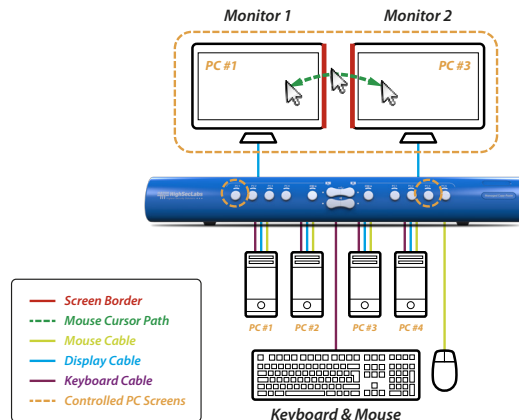
OPERATION

Preset #1 (default) { L CTRL | L CTRL | F11 | F1 }

- 2 display-monitors (monitor 1 & 2) are connected to the Primary and Secondary console ports.
- 4 single-display sources (PC 1-4) are connected to the Mini-Matrix source ports 1-4.
- Display-monitors are aligned horizontally so that the Primary screen is on the left and the Secondary is on the right.
- VDT mouse cursor movement axis is horizontal.

Highlights:

- Use the source selection panel to choose which sources to display.
- Switch between selected sources by dragging the mouse cursor horizontally.



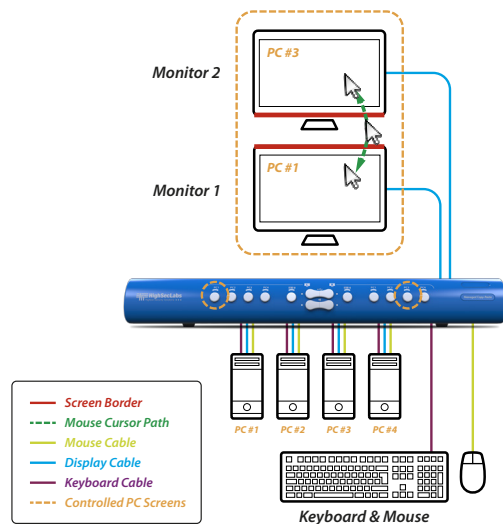
OPERATION

Preset #2 { L CTRL | L CTRL | F11 | F2 }

- 2 display-monitors (monitor 1 & 2) are connected to the Primary and Secondary console ports.
- 4 single-display sources (PC 1-4) are connected to the Mini-Matrix source ports 1-4.
- Display-monitors are aligned vertically so that the Secondary screen is on top of the Primary screen.
- VDT mouse cursor movement axis is vertical.

Highlights:

- Use the source selection panel to choose which sources to display.
- Switch between selected sources by dragging the mouse cursor vertically.



OPERATION

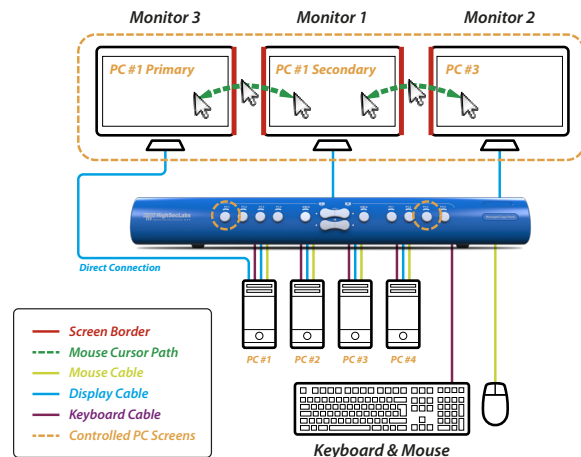
Preset #3 { L CTRL | L CTRL | F11 | F3 }

- 2 display-monitors (monitor 1 & 2) are connected to the Primary and Secondary console ports.
- 1 display-monitor (monitor 3) is connected directly to PC #1 primary-display adapter.
- PC #1 secondary-display adapter is connected to the Mini-Matrix source port 1.
- 3 single-display sources (PC 2, 3, 4) are connected to the Mini-Matrix source ports 2, 3, 4.
- All display-monitors are aligned horizontally so that the Primary screen of PC#1 is on the left, the Mini-Matrix Primary screen is on the middle and the Mini-Matrix Secondary screen is on the right.
- VDT mouse cursor movement axis is horizontal.

Download and install HSL's Multi Display Driver on source computers that have multiple screens (currently available only for Windows).

Example #1

VDT cursor navigation applies to Monitor 3 even though it is connected directly to PC#1

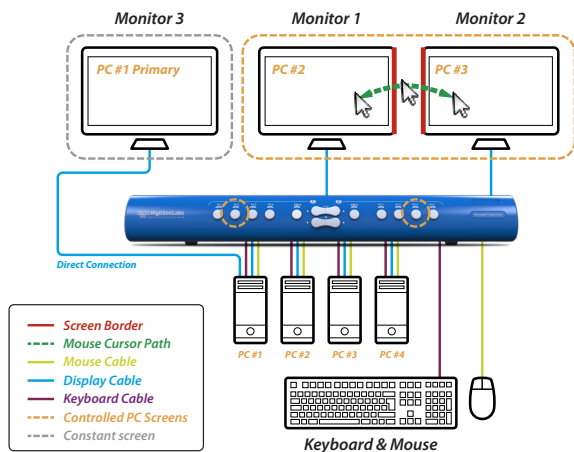


OPERATION

Preset #3 { L CTRL | L CTRL | F11 | F3 }

Example #2

Monitor 3 constantly displays PC#1 Primary screen even when switching to other sources



OPERATION

Preset #4 { L CTRL | L CTRL | F11 | F4 }

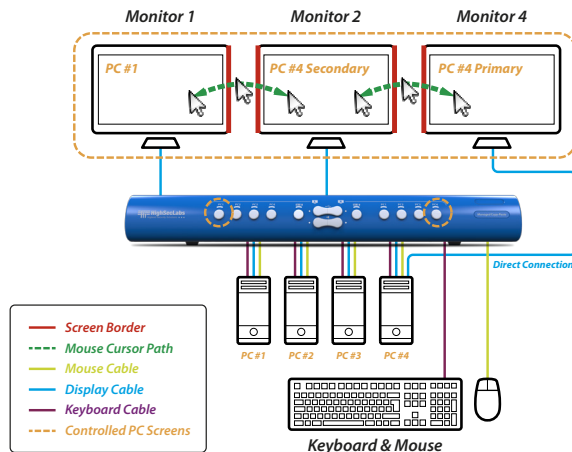
Same as Preset #3 while source #4 is directly connected to a primary screen.

- 2 display-monitors (monitor 1 & 2) are connected to the Primary and Secondary console ports.
- 1 display-monitor (monitor 4) is connected directly to PC #4 primary-display adapter.
- PC #4 secondary-display is connected to the Mini-Matrix source port 4.
- 3 single-display sources (PC 1, 2, 3) are connected to the Mini-Matrix source ports 1, 2, 3.
- All display-monitors are aligned horizontally so that the Mini-Matrix Primary screen is on the left, the Mini-Matrix Secondary screen is in the middle and the Primary screen of PC#4 is on the right.
- VDT mouse cursor movement axis is horizontal.

Download and install HSL's Multi Display Driver on source computers that have multiple screens (currently available only for Windows).

Example #1

VDT cursor navigation applies to Monitor 4 even though it is connected directly to PC#4

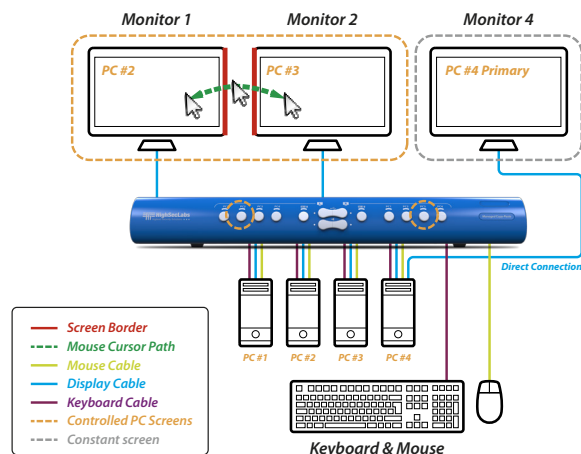


OPERATION

Preset #4 { L CTRL | L CTRL | F11 | F4 }

Example #2

Monitor 4 constantly displays PC#4 Primary screen even when switching to other sources

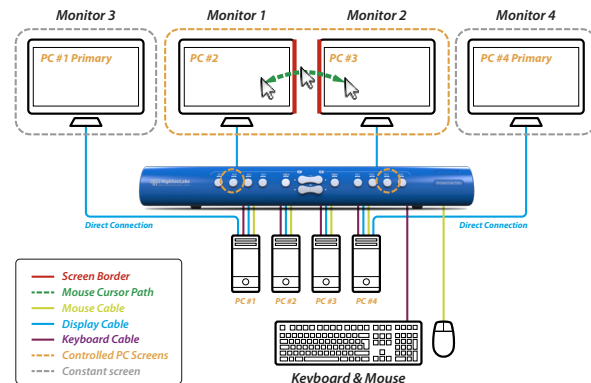


OPERATION

Preset #5 { L CTRL | L CTRL | F11 | F5 }

Combines Preset #3 and Preset #4.

- 2 display-monitors (monitor 1 & 2) are connected to the Primary and Secondary console ports.
- 2 display-monitors (monitor 3 & 4) are connected directly as primary-displays to PCs #1 and #4 respectively.
- PCs #1 and #4 secondary-display adapters are connected to the Mini-Matrix source ports 1 and 4.
- 2 single-display sources (PC 2, 3) are connected to the Mini-Matrix source ports 2, 3.
- All display-monitors are aligned horizontally so that the Primary screen of PC#1 is on the left and the Primary screen on PC#4 is on the right. The Mini-Matrix Primary and Secondary screens are in the middle.
- VDT mouse cursor movement axis is horizontal.



Highlights:

- Display and control PC#1 & PC#4 dual-displays.
- Control PC#2 and PC#3 while displaying the primary screens of PCs 1 and 4.

Download and install HSL's Multi Display Driver on source computers that have multiple screens (currently available only for Windows).

OPERATION

Preset #6 { L CTRL | L CTRL | F11 | F6 }

- 2 display-monitors (monitor 1 & 2) are connected to the Primary and Secondary console ports.
- 2 dual-display sources (PC 1 & 2) are connected to the Mini-Matrix source ports 1-4.
- Display-monitors are aligned vertically so that the Secondary screen is on top of the Primary screen.
- VDT mouse cursor movement axis is vertical.

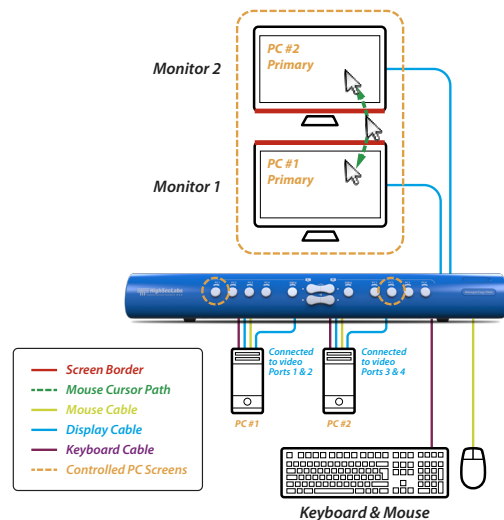
Highlights:

Use the source selection panel to choose which sources to display.

View and control any monitor combination, such as:

- PC#1 Primary and Secondary screens.
- PC#2 Primary and Secondary screens.
- PC#1 and #2 Primary screens
- PC#1 and #2 Secondary screens
- PC#1 Primary and PC#2 Secondary.
- PC#2 Primary and PC#1 Secondary.

Switch between selected sources by dragging the mouse cursor vertically.



Download and install HSL's Multi Display Driver on source computers that have multiple screens (currently available only for Windows).

OPERATION

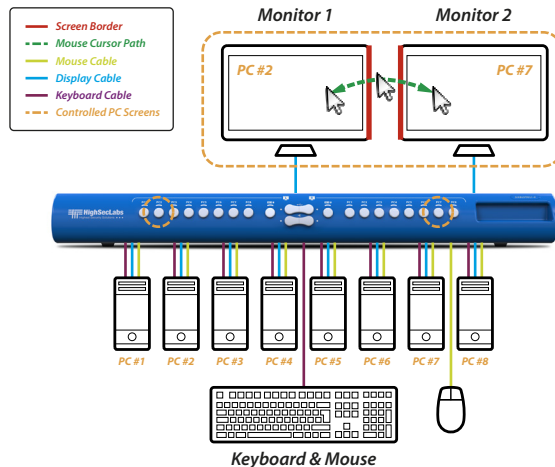
Preset #1 (default) { L Ctrl | L Ctrl | F11 | F1 } (applicable for both 4P and 8P)

Setup:

- Connect PCs to the computer/source ports: Connect each computer's display, USB, and audio cables to the corresponding computer port.
- Connect peripherals to the console ports: Connect two displays, keyboard, mouse, and speaker/headphone to the console ports.

To use:

- Choose which computer to display on each screen using the source selection panels.
- The left panel controls which computer to display on the primary display while the right panel controls the secondary display.
- Seamlessly switch between computers by moving the mouse cursor across display boarders.
- Keyboard, audio, and USB peripherals follow the mouse association.



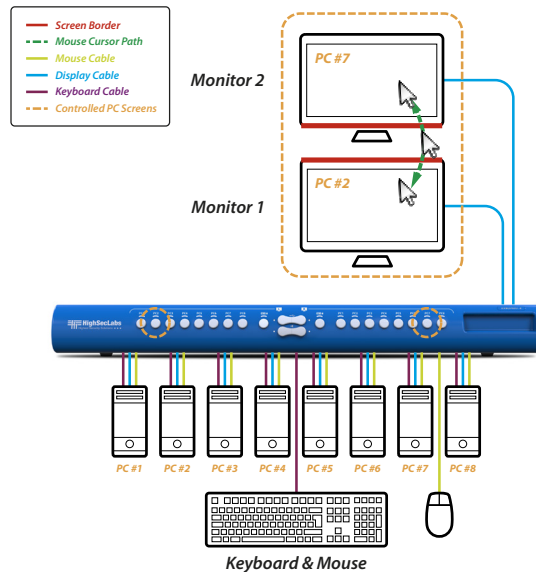
OPERATION

Preset #2 { L Ctrl | L Ctrl | F11 | F2 } (applicable for both 4P and 8P)

- Two displays/monitors (monitors 1 and 2) are connected to the primary and secondary console ports.
- Eight single-display sources (PC s1-8) are connected to the Mini-Matrix source ports 1-8.
- The displays/monitors are aligned vertically so that the secondary screen is on top of the primary screen.
- The VDT mouse cursor movement axis is vertical.

Highlights:

- Use the source selection panel to choose which sources to display.
- Switch between selected sources by dragging the mouse cursor vertically.



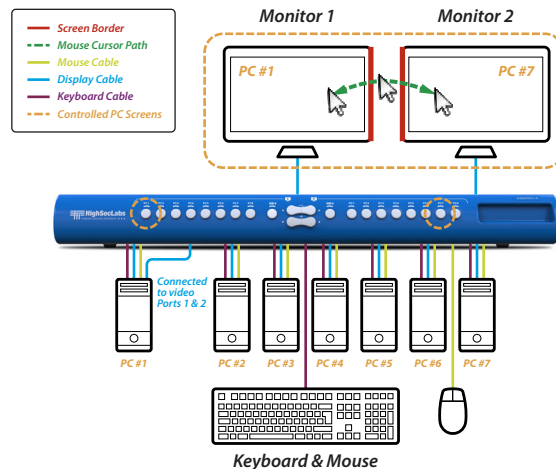
OPERATION

Preset #3 { L Ctrl | L Ctrl | F11 | F3 }

- Two displays/monitors (monitors 1 and 2) are connected to the primary and secondary console ports.
- The dual-display source (PC 1) is connected to the Mini-Matrix source ports 1 and 2.
- Single-display sources (PC 2-7) are connected to the Mini-Matrix source ports 3-8.
- The displays/monitors are aligned horizontally so that the secondary screen is on the right of the primary screen.
- The VDT mouse cursor movement axis is horizontal.

Highlights:

- Use the source selection panel to choose which sources to display.
- Switch between selected sources by dragging the mouse cursor horizontally.

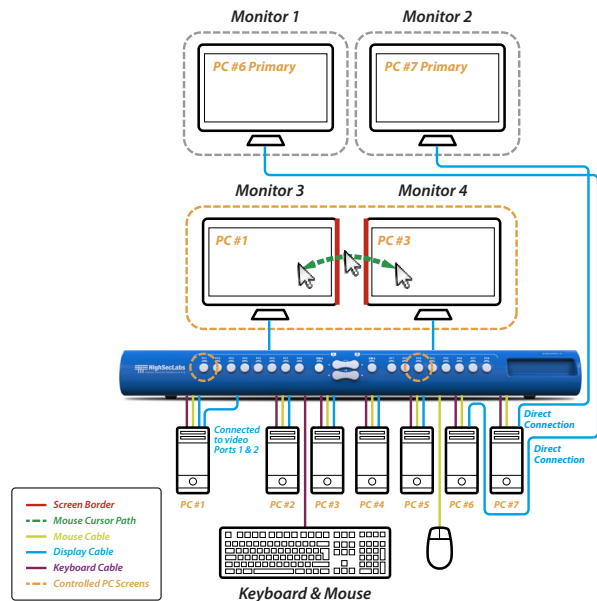


OPERATION

Preset #4 { L Ctrl | L Ctrl | F11 | F4 }

- Two display/monitors (monitors 1 and 2) are connected directly to the PC #6 and PC #7 primary-display adapter.
- Two display/monitors (monitor 3 and 4) are connected to the primary and secondary console ports.
- The dual-display source (PC 1) is connected to the Mini-Matrix source ports 1 and 2.
- The PC #6 secondary-display adapter is connected to the Mini-Matrix source port 7.
- The PC #7 secondary-display adapter is connected to the Mini-Matrix source port 8.
- Four single-display sources (PC 2, 3, 4, and 5) are connected to the Mini-Matrix source ports 3, 4, 5, and 6.
- Two display/monitors (monitors 1 and 2) are aligned vertically so that the Mini-Matrix primary screens are on top, and the Mini-Matrix secondary screens are at the bottom.

Note: Any externally connected display should have the same native resolution of the primary display connected directly to the matrix.

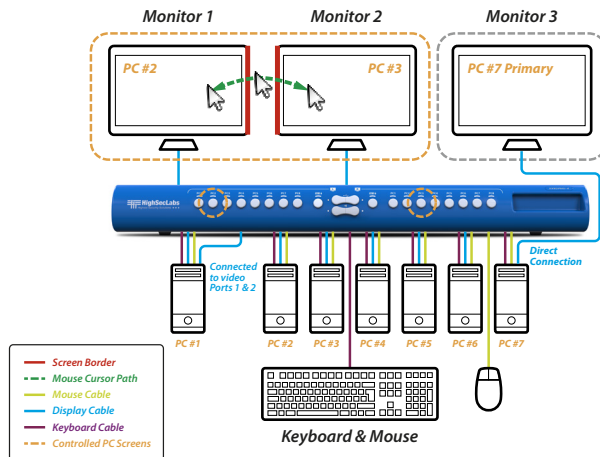


OPERATION

Preset #5 { L Ctrl | L Ctrl | F11 | F5 }

- Two displays/monitors (monitors 1 and 2) are connected to the primary and secondary console ports.
- One display/monitor (monitor 3) is connected directly as the primary-display to PC #7.
- The dual-display source (PC 1) is connected to the Mini-Matrix source ports 1 and 2.
- Five single-display sources (PC 2, 3, 4, 5, and 6) are connected to the Mini-Matrix source ports 3, 4, 5, 6, and 7.

Note: Any externally connected display should have the same native resolution of the primary display connected directly to the matrix.



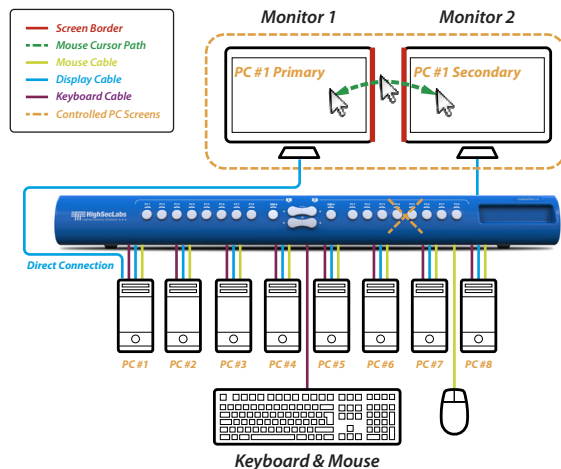
OPERATION

Preset #6 { L Ctrl | L Ctrl | F11 | F6 }

- One display/monitor (monitor 2) is connected to the primary console port.
- One display/monitor (monitor 1) is connected directly to the PC #1 primary-display adapter.
- The PC #1 secondary-display adapter is connected to the Mini-Matrix source port 1.
- Seven single-display sources (PCs 2-8) are connected to the Mini-Matrix source ports 2-8.
- All display/monitors are aligned horizontally so that the primary screen of PC #1 is on the left, and the Mini-Matrix primary screen, is on the right.
- The right side of the Mini-Matrix is disabled.
- The VDT mouse cursor movement axis is horizontal.

Note: Any externally connected display should have the same native resolution of the primary display connected directly to the matrix.

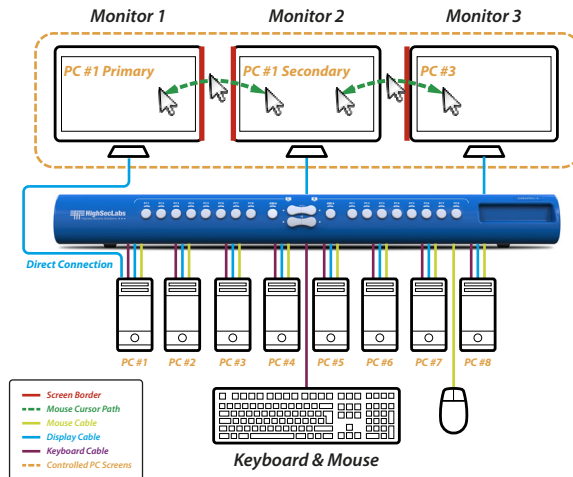
Download and install HSL's Multi Display Driver on source computers that have multiple screens (currently available for Windows only).



OPERATION

Preset #7 { L Ctrl | L Ctrl | F11 | F7 }

- One display/monitor (monitor 2) is connected to the primary console port.
- One display/monitor (monitor 3) is connected to the secondary console port.
- One display/monitor (monitor 1) is connected directly to the PC #1 primary-display adapter.
- The PC #1 secondary-display adapter is connected to the Mini-Matrix source port 1.
- Eight single-display sources (PCs 2-8) are connected to the Mini-Matrix source ports 2-8.
- All displays/monitors are aligned horizontally so that the primary screen of PC #1 is on the left, and the Mini-Matrix primary screen is on the right.
- The VDT mouse cursor movement axis is horizontal.



Note: Any externally connected display should have the same native resolution of the primary display connected directly to the matrix.

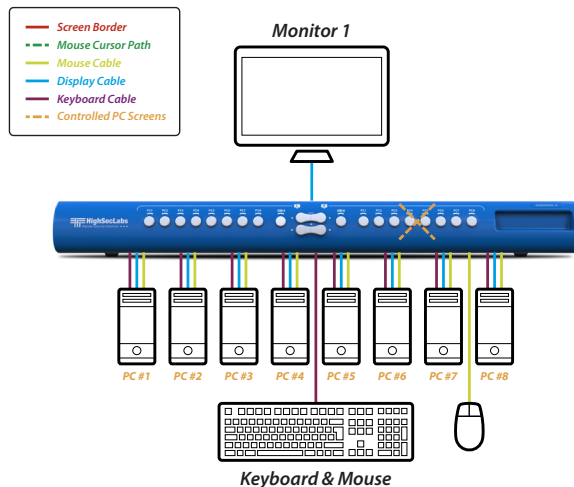
Download and install HSL's Multi Display Driver on source computers that have multiple screens (currently available for Windows only).

OPERATION

Preset { L Ctrl | R Ctrl | M } - Legacy Mode - functioning as KVM (applicable for both 4P and 8P)

- One display/monitor is connected to the primary console ports.
- Eight single-display sources (PCs 1-8) are connected to the Mini-Matrix source ports 1-8.
- The right side of the Mini-Matrix is disabled.

Download and install HSL's Multi Display Driver on source computers that have multiple screens (currently available for Windows only).



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	Freeze mouse on active channel	(Freeze) - L CTRL L CTRL F11 f (Un Freeze) - L CTRL L CTRL F11 u
3	Increase / Decrease mouse speed	(Increase) - L CTRL L CTRL F11 + (Decrease) - L CTRL L CTRL F11 -
4	Change presets	L CTRL L CTRL F11 F1 – F6
5	System Reset to factory defaults	L CTRL L CTRL F11 r
6	Enter Terminal-Mode	L CTRL R CTRL t

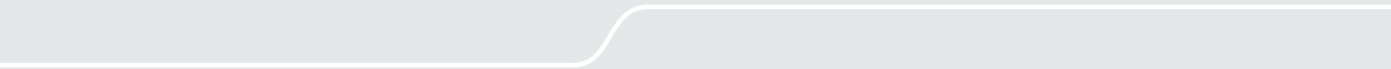
Change Channel Using KB Shortcuts

To select a channel using a KB shortcut please use the following key combination:

L CTRL | L CTRL | n – For left screen switching

R CTRL | R CTRL | n – For right screen switching

The currently selected channel is indicated by the illumination of the appropriate push-button on the product Front Panel.



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