HighSecLabs
Highest Security Solutions ● ● ● Ltd.

Secure KVM Combiner

Models:

K424F – Secure 2 to 4 Port DVI Video KVM Combiner w/fUSB
K426E – Secure 2 to 6 Ports DVI Video KVM Combiner w/fUSB

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INTRODUCTION

HSL Secure KVM Combiner

HSL's secure KVM combiner switches allow simultaneously interacting and presenting up to six computers from different security classification levels on two displays while isolating all coupled hosts from each other, keeping the data of each computer completely separate and protecting against data leakage and malicious attacks through shared USB, keyboard, mouse, video and audio peripherals.

This guide instructs how to install, configure and operate HSL's KVM Combiner.
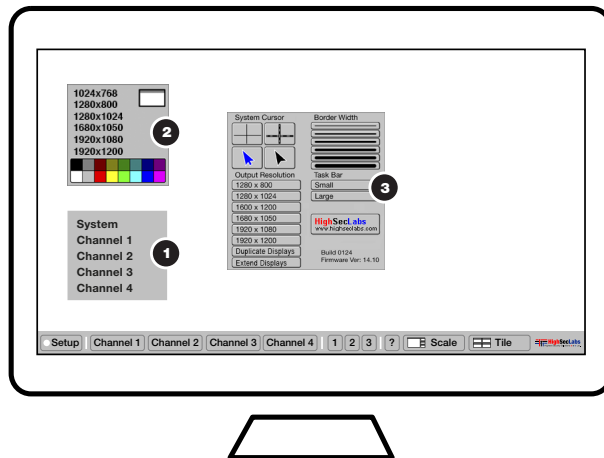
INSTALLATION

Installing the Combiner

Step 1 – Combiner Setup Overview

The Setup Menu: accessible through the lower left screen corner. Allows configuring various system settings, such as, output resolution, screen duplication, cursor color and more.

Setup Menu Description:

1 **Main Admin Menu:** select which settings to configure (system settings / channel settings).

2 **Channel Settings:** set the screen resolution and frame color of the selected channel number.

3 **System Settings:** Change display output resolution, screen duplication, frame border width, operation-taskbar size and system cursor type.

INSTALLATION

Step 2 – Cable Installation

1. Connect console port peripherals:

   • Connect video, keyboard, mouse and audio peripherals to the combiner's console ports. These will be shared securely between all computers.

   • Connect a smartcard/biometric reader to the combiner's console fUSB secure port to support user authentication across multiple isolated computers.

Notes:

   • For optimum compatibility use the supplied 5-button mouse with the combiner's console port.

   • The mechanical key lock on the front panel of legacy devices is no longer in use.

2. Computer channel ports:

   • For each PC, connect the video, keyboard, mouse, fUSB and audio cables to the combiner's computer ports.

Notes:

1. Keyboard shortcut keys are to be pressed sequentially

2. CTRL key refers to **LEFT CTRL** key.

fUSB Cable
Audio Cable
Mouse Cable
Display Cable
Keyboard Cable

Primary Display   Secondary Display

Smart-Card Reader

Audio   Keyboard   Mouse

Computers

CONSOLE PORTS   *COMPUTER/SOURCE PORTS*
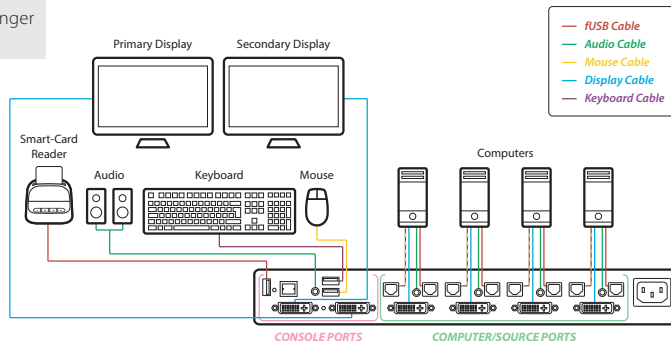
INSTALLATION

Step 3 – Power ON the Combiner

- Turn ON all the PCs.
- Connect the power supply and power ON the combiner (approximate boot time is 30 seconds).
- The combiner boots into Tile view-mode, where all sources are presented equally on the screen.

Move mouse to switch PCs

PC #4

PC #2

PC #3

PC #1

Multiple Sources

#1 #2 #3 #4

SECURE KVM COMBINER

Single Keyboard & Mouse
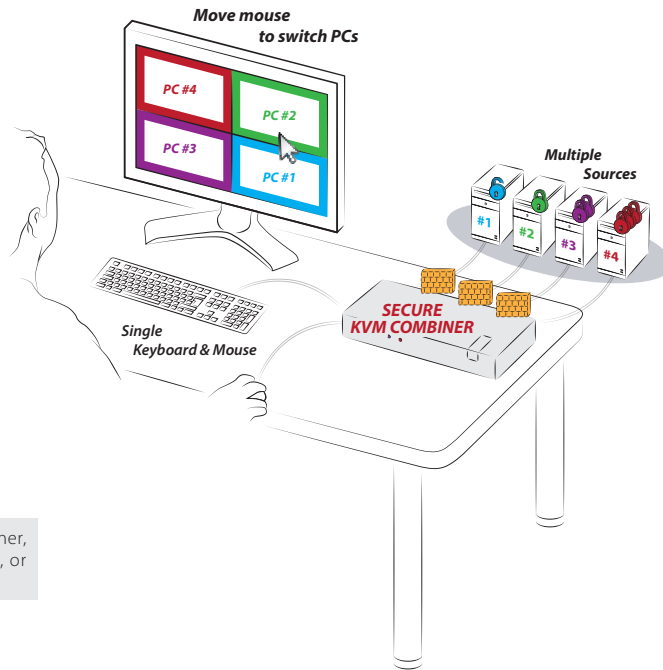
Note: In case no picture is presented after powering ON the combiner, connect an alternate display to the combiner's display console port, or perform a reset to factory default.
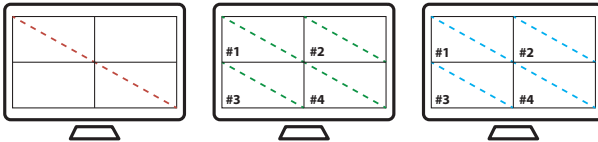
INSTALLATION

Step 4 – Configure Display Output

Important Notes:

1. It is highly recommended to use the same screen resolution settings across all levels as described below.

— *Output Resolution (Match Monitor Resolution)*
— *Channel Resolution (Match PC Resolution)*
— *Computer Resolution = (Windows/Linux/Mac OS Screen Resolution)*

#1   #2

#3   #4

#1   #2

#3   #4

Use the same screen resolution across all level

2. Selecting a resolution that is not supported by your screen will result in a blank display which might require connecting a monitor that supports the selected resolution or resetting the combiner to factory default.

3. For working with dual displays, please refer to the appendix.

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- **Enter System mode:** type: **{ CTRL | CTRL | o }**. When active, an operation taskbar appears at the bottom of the screen.

- **Set Output Resolution:** on the lower left screen corner click **Setup -> System -> Output Resolution** and select the screen resolution that matches your display (for example: 1920x1080).

Set output resolution
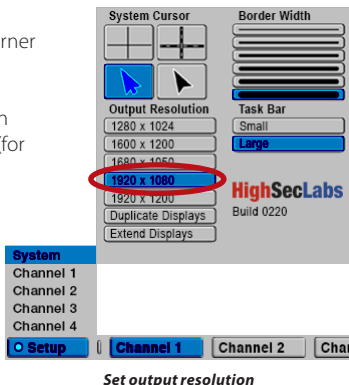
- **Set Channel Resolution:** Click **Setup -> Channel#** and select the screen resolution for the selected channel number (for example: 1920x1080).
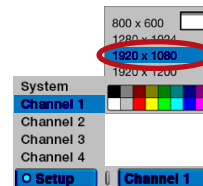
- **Set Computer Resolution:** Under the computer's operating system settings set the screen resolution to match the Output & Channel resolution (for example: 1920x1080).
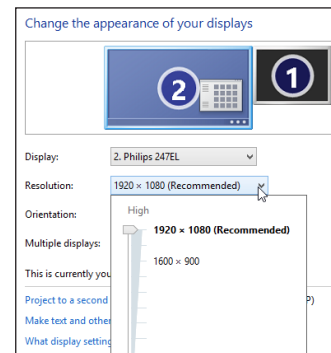
INSTALLATION

Step 5 – Working with Dual Displays

Connecting two displays to the combiner's console output ports allows working in Extended or Duplicate mode.

Note: Skip this section if your combiner model does not support dual screens or you've connected only one display.

• **Set Screen Duplication Mode:** click **Setup -> System -> Output Resolution** and select **Duplicate Displays**.

In screen duplication mode all incoming sources are presented on the primary display which is duplicated to a second display. This layout is ideal for meeting / control room and big screen TV projection scenarios.
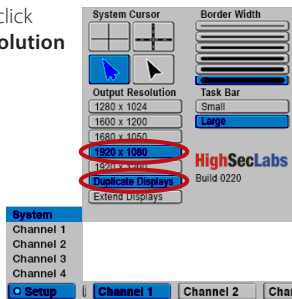
• **Set Screen Extending Mode:** click **Setup -> System -> Output Resolution** and select **Extend Displays**.

In extended view mode the incoming channel presentation is split between two displays.

"Extend" in Tile Mode

Primary   Secondary

"Extend" in Scale Mode

Primary   Secondary

"Duplicate" in Tile Mode

Primary   Secondary
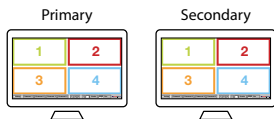
"Duplicate" in Scale Mode

Primary   Secondary
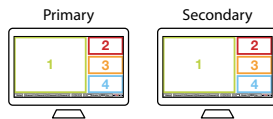
INSTALLATION

Step 6 – 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.

OPERATION

Operating the Combiner

Step 1 – Operation Modes Overview

Operation modes determine the device state.

In System mode combiner settings can be modified, the mouse is not passed-through to the source computers and the user can toggle between various channels and view layout modes (Scale/Tile/Custom) using the operation-taskbar, a mouse click, keyboard shortcuts or touch screen gestures. In system mode the user can't interact with the source computers.

- **System mode taskbar & mouse:** an operation-taskbar appears at the bottom of the screen and the mouse cursor is set to System mode (appears in blue).
- **System mouse functionality:** the mouse is used for operation-purposes, such as, changing channels, toggling between view modes, entering the setup...etc. It can't be used for interacting with sources.
- **Setup menu:** accessible through the lower left screen corner. Allows configuring various system settings, such as, output resolution, screen duplication, cursor color and more.

- **Operation-taskbar:**
  - Toggle between channels by clicking on a channel number.
  - Toggle between view modes by clicking Scale/Tile/Custom menu buttons.
  - Save custom screen layouts as presets by long-pressing the 1/2/3 buttons.

`○ Setup` `⏐ Channel 1 ■ Channel 2 ■ Channel 3 ■ Channel 4 ⏐⏐ 1 2 3 ⏐⏐ ? ⏐ ⬜ Scale ⊞ Tile` **HighSecLabs**

In User mode the user can simultaneously interact with multiple source computers at the same time using a single set of keyboard and mouse. The user can toggle between various channels and view layout modes (Scale/Tile/Custom) using a mouse click, keyboard shortcuts or touch screen gestures.

- **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. No need to push any buttons. Audio and keyboard follow mouse as cursor crosses display borders.

Notes:

1. A complete list of toggling options is described further in this document.
2. When VDT is disabled and the combiner is set to User mode, the mouse cursor will not move between screen boarders. To change sources, use toggling options.

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Step 2 – View Modes Overview

View modes determine how multiple sources are presented on the combiner's screen. Toggle between view modes in a mouse click, using keyboard shortcuts or touch screen gestures.

- **Tile View mode:** In Tile mode all sources are spread equally on the screen, the user can independently interact with each source and enlarge any given source to maximum screen size by clicking on it.

Click to Enlarge
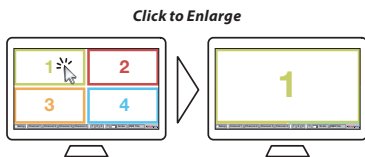
- **Scale View mode:** In Scale mode the user can interact with all sources while one source is enlarged and others are aligned vertically on the right screen side. Switch between the enlarged sources by clicking on any of the aligned sources on the right.

Click to Enlarge
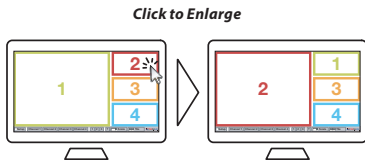
- **Custom View mode:** Custom views allow rearranging, positioning and saving screens as needed by the user for future work.

Rearrange and Position screens as you want
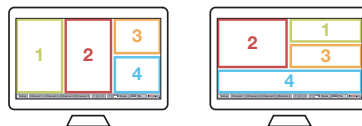
2.1 Active Source

Active source is the source that has current access to the combiner's peripherals (keyboard, mouse, audio and authentication-device).

The user can select which source will be active in various ways including a mouse click, keyboard shortcuts, touch screen gestures and by using the combiner's front panel push buttons.

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Step 3 – Toggling Options

Once you have connected all the sources and completed the initial steps, you can start working with the combiner. The next section explains how to switch between operation modes and operate the combiner using its versatile view and control options.

Important Notes:

1. A complete list of toggling options is described further in this document.

2. Always use the left control key (CTRL) unless otherwise specified.

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. For example, in AZERTY keyboard, where the letter A is equivalent to the location of the letter Q on a QWERTY keyboard, type **{ CTRL | CTRL | a }** to switch to tile view.

Most useful toggling options:

#	Action Description	Keyboard	Mouse
1	Toggle between System / User modes	(system) - **CTRL | CTRL | o** (user) - **CTRL | CTRL | u**	Click the side-mouse button to toggle between System / User modes.
2	Switch between Tile / Scale Views	(Tile) - **CTRL | CTRL | q** (Scale) - **CTRL | CTRL | s**	1. Click the side-mouse button to toggle to System mode. 2. In System mode: Click "Tile" or "Scale" on the operation-taskbar.
3	Enable / Disable Cursor Navigation VDT	(enable) - **CTRL | CTRL | F11 | c** (disable) - **CTRL | CTRL | F11 | b**	N/A
4	Enlarge a source to full screen	**CTRL | CTRL | f**	1. In System mode, Tile view: Double click any tile. 2. In System mode, Scale view: Double click on the enlarged window.
5	Go back to last layout before enlarging to full screen	**CTRL | CTRL | z**	1. Click the side-mouse button to toggle to System mode. 2. Click Scale / Tile / Custom buttons on the operation-taskbar.

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Most useful toggling options (Cont.):

#	Action Description	Keyboard	Mouse
6	**Resize channel & content simultaneously*** *** First, switch to System mode, Tile view.**	Select a channel - **CTRL | CTRL | Channel# (1-6)** Reduce scaling - **CTRL | CTRL | "-"** Increase scaling - **CTRL | CTRL | "+"** **Note: use the "-" and "=" keys instead of the numeric pad keys.**	1. Click to select a channel. 2. Press and hold the side mouse button & scroll the mouse wheel to reduce/increase scaling. 3. For fast scaling hold the left CTRL
7	**System Reset to factory defaults**	**CTRL | CTRL | F11 | r**	

Notes:
1. Keyboard shortcut keys are to be pressed sequentially.
2. CTRL key refers to **LEFT CTRL** key.

OPERATION

Step 4 – Complete toggling options table

Toggle between view modes in a mouse click, using keyboard shortcuts or touch screen gestures.

#	Action / Mode	Keyboard	Mouse	Touch Screen
1	**Enter System Mode**	**CTRL | CTRL | o**	Click the side-mouse button to toggle between System / User modes.	1. **In Scale view:** Tap 4 times on the enlarged window. 2. **In Tile view:** Touch and hold the uppermost right corner of the screen for 4 seconds.
2	**Enter User Mode**	**CTRL | CTRL | u**	Click the side-mouse button to toggle between System / User modes.	1. **In Tile view:** Tap 4 times on the uppermost right corner of the screen. 2. **In Scale view:** Tap 4 times on the enlarged screen.
3	**Switch to Tile View**	**CTRL | CTRL | q**	1. Click the side-mouse button to toggle between System / User modes. 2. In System mode: Click "Tile" on the operation-taskbar.	1. **In Scale view, User mode:** Tap 4 times on the enlarged window. 2. **In Scale view, System mode:** Tap 4 times on the enlarged window to switch to User mode, then tap 4 times (again).
4	**Switch to Scale View**	**CTRL | CTRL | s**	1. Click the side-mouse button to toggle between System / User modes. 2. In System mode: Click "Scale" on the operation-taskbar.	1. **In Tile view, User mode:** Touch and hold the uppermost right corner of the screen for 4 seconds. 2. **In Tile view, System mode:** Tap "Scale" on the operation-taskbar.
5	**View Custom Presets** **Note: read "Save custom views as presets" section first.**	**CTRL | CTRL | F1-F4**	1. Click the side-mouse button to toggle between System / User modes. 2. In System mode: Click 1/2/3 buttons on the operation-taskbar.	N/A (Custom Tile Preset can be viewed by clicking "Tile" on the operation-taskbar)

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#	Action / Mode	Keyboard	Mouse	Touch Screen
6	**Enable Cursor Navigation VDT** **Note: allow 10 seconds delay after enabling for the 1st time.**	**CTRL | CTRL | F11 | c**	N/A	N/A
7	**Disable Cursor Navigation VDT**	**CTRL | CTRL | F11 | b**	N/A	N/A
8	**Change Active Source** **Note: sources can also be switched by using the combiner's front panel push buttons.**	**CTRL | CTRL | Channel# (1-6)**	**In System mode:** Click the channel window. **or** Click the channel number on the operation-taskbar. **or** Scroll the mouse wheel. **In User mode (with VDT ON):** Move mouse cursor across display boarders.	Touch the channel's screen area.
9	**Enlarge a source to full screen**	**CTRL | CTRL | f**	**In System mode, Tile view:** Double click any tile. **In System mode, Scale view:** Double click on the enlarged window.	**In User mode, Tile view:** Tap 4 times on any tile. **In System mode, tile view:** Tap 4 times on any tile to switch to User mode, then tap 4 times (again) on any tile.
10	**Go back to last layout before enlarging to full screen**	**CTRL | CTRL | z**	1. Click the side-mouse button to toggle to System mode. 2. Click Scale / Tile / Custom buttons on the operation-taskbar.	Tap 4 times anywhere on the screen.
11	**Presentation mode ON; Enlarge each channel to full screen when changing active source using** [5.6] **CTRL | CTRL | Channel# (1-4)**	**CTRL | CTRL | p**	N/A	N/A
12	**Presentation mode OFF** [5.6]	**CTRL | CTRL | n**	N/A	N/A

[5.6] This action is explained in detail using a step by step description ahead.

OPERATION

#	Action / Mode	Keyboard	Mouse	Touch Screen
13	**Resize channel**[5.1] 1. **First, switch to System mode, Tile view.** 2. **See Actions 13a / 13b**	N/A	1. Click to select a channel. 2. Place the mouse cursor at the channel's lower right corner. 3. Press and hold the right mouse button and drag the channel's screen to resize.	Tap and hold the lower right corner of a specific channel and drag to resize.
13a	**Fit content to newly resized channel area while keeping aspect ratio** * First, resize channel.	**CTRL | CTRL | w**	N/A	N/A
13b	**Fit content to newly resized channel area without keeping aspect ratio** * First, resize channel.	**CTRL | CTRL | y**	N/A	N/A
14	**Resize channel & content simultaneously**[5.2] * First, switch to System mode, Tile view.	1. Select a channel **CTRL | CTRL | Channel# (1-6)** 2. Reduce scaling **CTRL | CTRL | "-"** 3. Increase scaling **CTRL | CTRL | "+"** **Note: use the "-" and "=" keys instead of the numeric pad keys.**	1. Click to select a channel. 2. Press and hold the side mouse button & scroll the mouse wheel to reduce/increase scaling. 3. For fast scaling hold the left CTRL	Tap and hold the midpoint of the vertical or horizontal channel border and drag to scale.

* This action is explained in detail using a step by step description ahead.

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#	Action / Mode	Keyboard	Mouse	Touch Screen
15	**Drag & rearrange channel windows**[5.3] *** First, switch to System mode, Tile view.**	N/A	1. Click to select a channel. 2. Press and hold the left mouse button and drag the channel window.	Tap and hold the upper left corner of a channel and drag the window.
16	**Save custom views as presets**[5.4] 1. **First, switch to System mode, Tile view.** 2. **Rearrange channel windows layout.**	N/A	On the operation-taskbar, long press the "1" or "2" or "3" button for 3 seconds to save your preset.	N/A
17	**View custom presets***	**CTRL | CTRL | F1-F3**	1. First, switch to System mode, Tile view. 2. Click 1/2/3 buttons on the operation-taskbar.	N/A
18	**Save a custom tile preset**[5.4] 1. **First, switch to System mode, Tile view.** 2. **Rearrange channel windows layout.**	N/A	On the operation-taskbar, long press the "Tile" button for 3 seconds to save your preset.	N/A
19	**View custom tile**[5.4]	**CTRL | CTRL | F4**	1. First, switch to System mode, Tile view. 2. Click the "Tile" button.	1. First, switch to System mode, Tile view. 2. Tap on "Tile" button on the operation-taskbar.

* This action is explained in detail using a step by step description ahead.

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#	Action / Mode	Keyboard	Mouse	Touch Screen
20	**Dual Screen** **Duplicate Screens (On/Off)**	**CTRL | CTRL | F11 | l**		
21	**Dual Screen** **Duplicate Primary** **Project primary display on both displays**	**CTRL | CTRL | F11 | j | j**	N/A	N/A
22	**Dual Screen** **Duplicate Secondary** **Project secondary display on both displays**	**CTRL | CTRL | F11 | k | k**	N/A	N/A
23	**Dual Screen** **Switch Positions** **Switch position between primary and secondary displays**	**CTRL | CTRL | F11 | k | j** **CTRL | CTRL | F11 | j | k**	N/A	N/A

* This action is explained in detail using a step by step description ahead.

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#	Action / Mode	Keyboard	Mouse	Touch Screen
24	**Freeze channel layer**[5.5]	**CTRL | CTRL | F11| F | (1-6)**	N/A	N/A
25	**Enable Right CTRL** **Toggles between the left & right CTRL keys for system commands**	**L CTRL | L CTRL | F11| i**	N/A	Once enabling the Right CTRL, touch screen gestures switch to the Left screen side. For example, touch and hold the upper left screen corner to switch from Tile view, user mode to Scale view.
26	**Enable Left CTRL** **Toggles between the right CTRL keys for system commands**	**R CTRL | R CTRL | F11| i**	N/A	N/A
27	**Disable front panel and DCU** **Disable/Enable the front panel push buttons and DCU functionality. Once disabled, switching channels is only functional through mouse and keyboard shortcuts.**	**CTRL | CTRL | F11 | e**	N/A	N/A
28	**Reset to factory default**	**CTRL | CTRL | F11| r**	N/A	N/A

* This action is explained in detail using a step by step description ahead.

OPERATION

Step 5 – Customize Channel Window Layout

Each channel's window layout can be customized beyond the default
Tile / Scale view modes and saved as a custom view mode preset.

5.1 Resize a channel window:

#	Action Description	Keyboard	Mouse	Touch Screen
1	**Enter System Mode**	**CTRL	CTRL	o**	Click the side-mouse button to toggle between System / User modes.	In Scale view: Tap 4 times on the enlarged window. In Tile view: Touch and hold the uppermost right corner of the screen for 4 seconds.
2	**Switch to Tile view**	**CTRL	CTRL	q**	Click the side-mouse button to toggle between System / User modes. In System mode: Click "Tile" on the operation-taskbar.	<you should already be in Tile view>
3	**Resize channel**		Click to select a channel. Place the mouse cursor at the channel's lower right corner. Press and hold the right mouse button and drag the channel's screen to resize.	Tap and hold the lower right corner of a specific channel and drag to resize.
4	**Fit content to newly resized channel area**	**CTRL	CTRL	w**		
5	**Fit content to newly resized channel area without keeping aspect ration**	**CTRL	CTRL	y**		
6	**Optional: Revert to Tile mode**	**CTRL	CTRL	q**		

OPERATION

5.2 Resize channel window & content at the same time:

#	Action Description	Keyboard	Mouse	Touch Screen
1	Enter System Mode	**CTRL	CTRL	o**	Click the side-mouse button to toggle between System / User modes.	In Scale view: Tap 4 times on the enlarged window. In Tile view: Touch and hold the uppermost right corner of the screen for 4 seconds.
2	Switch to Tile view	**CTRL	CTRL	q**	Click the side-mouse button to toggle between System / User modes. In System mode: Click "Tile" on the operation-taskbar.	<you should already be in Tile view>
3	Resize channel & content	Select a channel **CTRL	CTRL	Channel# (1-6)** Reduce scaling **CTRL	CTRL	"-"** Increase scaling **CTRL	CTRL	"+"** **Note: use the "-" and "=" keys instead of the numeric pad keys.**	Click to select a channel. Press and hold the side mouse button & scroll the mouse wheel to reduce/increase scaling. For fast scaling hold the left CTRL	Tap and hold the midpoint of the vertical or horizontal channel border and drag to scale.

Note: see 'Save custom views as presets' section ahead, to save a custom screen layout.

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5.3 Drag and Rearrange channel windows:

#	Action Description	Keyboard	Mouse	Touch Screen
1	Enter System Mode	**CTRL | CTRL | o**	Click the side-mouse button to toggle between System / User modes.	In Scale view: Tap 4 times on the enlarged window. In Tile view: Touch and hold the uppermost right corner of the screen for 4 seconds.
2	Switch to Tile view	**CTRL | CTRL | q**	Click the side-mouse button to toggle between System / User modes. In System mode: Click "Tile" on the operation-taskbar.	<you should already be in Tile view>
3	Drag channel window		Click to select a channel. Press and hold the left mouse button and drag the channel window.	Tap and hold the upper left corner of a channel and drag the window.

Note: to revert from the custom tile to the original tile mode, type **CTRL \| CTRL \| q** and then long press the "Tile" button to save.

OPERATION

5.4 Save custom views as presets:

Save custom screen layouts as presets by long-pressing the 1/2/3 buttons.

| ○ Setup | ▯ | Channel 1 ■ | Channel 2 ■ | Channel 3 ■ | Channel 4 ☐ | ▯ | 1 | 2 | 3 | ▯ | ? | ▯ | ▭ Scale | ⊞ Tile | **HighSecLabs** |

#	Action Description	Keyboard	Mouse	Touch Screen
1	Enter System Mode	CTRL | CTRL | o	Click the side-mouse button to toggle between System / User modes.	In Scale view: Tap 4 times on the enlarged window. In Tile view: Touch and hold the uppermost right corner of the screen for 4 seconds.
2	Switch to Tile view	CTRL | CTRL | q	Click the side-mouse button to toggle between System / User modes. In System mode: Click "Tile" on the operation-taskbar.	<you should already be in Tile view>
3	Rearrange channels as described in the previous steps			
4	Save a custom preset to 1/2/3 button		On the operation-taskbar, long press the "1" or "2" or "3" button for 3 seconds to save your preset.	
5	View custom presets	CTRL | CTRL | F1-F3	Click 1/2/3 buttons on the operation-taskbar.	
6	Save a custom Tile preset		On the operation-taskbar, long press the "Tile" button for 3 seconds to save your preset.	
7	View custom Tile preset	CTRL | CTRL | F4	Click the "Tile" button.	Tap on "Tile" button on the operation-taskbar.
8	View original Tile preset	CTRL | CTRL | q		

Note: to revert from the custom tile to the original tile mode, type **CTRL | CTRL | q** and then long press the "Tile" button to save.

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5.5 **Freeze channel layer** (Applicable only for 6 port products)

In scenarios where a specific channel window has to remain on top of others, for example when a live camera has to be constantly viewed, it is possible to freeze the selected channel window and pinpoint its position so that it remains on top when switching between active sources.

#	Action Description	Keyboard	Mouse	Touch Screen
1	Enter System Mode	CTRL | CTRL | o	Click the side-mouse button to toggle between System / User modes.	In Scale view: Tap 4 times on the enlarged window. In Tile view: Touch and hold the uppermost right corner of the screen for 4 seconds.
2	Switch to Tile view	CTRL | CTRL | q	Click the side-mouse button to toggle between System / User modes. In System mode: Click "Tile" on the operation-taskbar.	<you should already be in Tile view>
3	Rearrange channels as described in the previous steps Example: place the resized channel (#2) on top of another channel window			
4	Save a custom preset to 1/2/3 button		On the operation-taskbar, long press the "1" or "2" or "3" button for 3 seconds to save your preset.	
5	Freeze channel layer	CTRL | CTRL | F11 | F | 2 From now on, channel #2 window will remain on top.		
6	Switch Active Channels	CTRL | CTRL | 1-6		
7	Toggle off Freeze channel #2	CTRL | CTRL | F11 | F | 2		

OPERATION

5.6 Presentation mode:

In presentation mode, when changing active channels, every channel is automatically enlarged to full screen size.

Once in full screen, use the key sequence **CTRL | CTRL | Channel# (1-4)** or push the front panel buttons to switch back to Tile mode and then repeat the **CTRL | CTRL | Channel# (1-4)** sequence to enlarge another channel (see example below).

#	Action Description	Keyboard	Mouse	Touch Screen
1	**Switch to Tile View**	**CTRL	CTRL	q**	Click the side-mouse button to toggle between System / User modes. In System mode: Click "Tile" on the operation-taskbar.	In Scale view, User mode: Tap 4 times on the enlarged window. In Scale view, System mode: Tap 4 times on the enlarged window to switch to User mode, then tap 4 times (again).
2	**Presentation mode ON; Enlarge each channel to full screen when changing active source using** **CTRL	CTRL	Channel# (1-6)**	**CTRL	CTRL	p**	N/A	N/A
3	**Change Active Source** **Note: sources can also be switched by using the combiner's front panel push buttons.**	**Example:** Enlarge Channel#1 **CTRL	CTRL	1** Revert to Tile View **CTRL	CTRL	1-4** --------------------------- Enlarge Channel#2 **CTRL	CTRL	2** Revert to Tile View **CTRL	CTRL	1-4**	Use steps described in previous actions	Use steps described in previous actions
4	***Presentation mode OFF**	**CTRL	CTRL	n**	N/A	N/A

COMBINER CASCADING

Introduction

Cascade combiners to view and control up to 36 sources on a single display, using one set of keyboard, mouse and audio.

- Keep all combiner-features throughout the cascaded chain (View modes, VDT…etc.)

- Native touchscreen support across all sources.

- Independently resize and rearrange the screen layouts of each source.

- Expand any source to full screen.

- Support RS232 commands for easy screen layout switching programming.
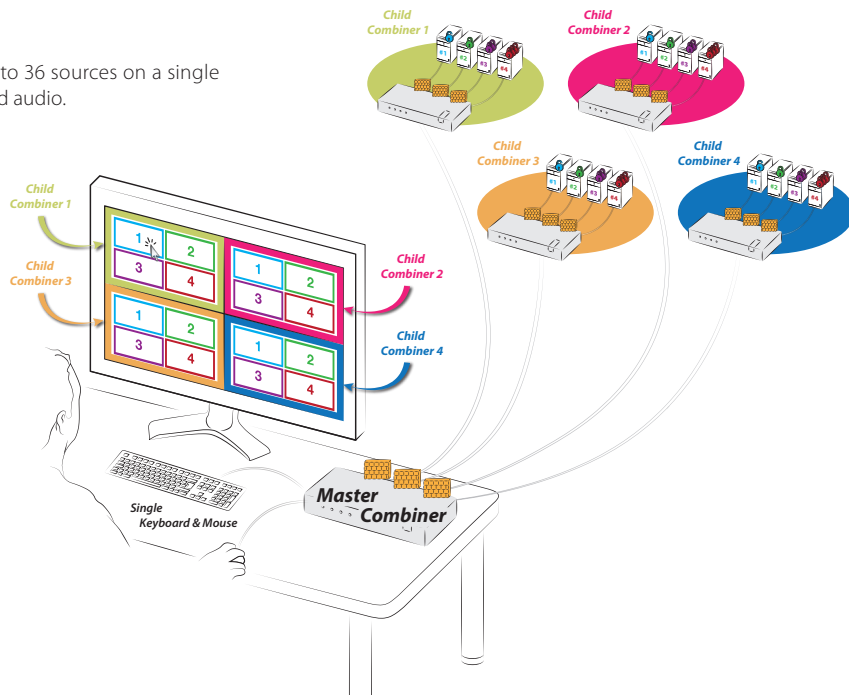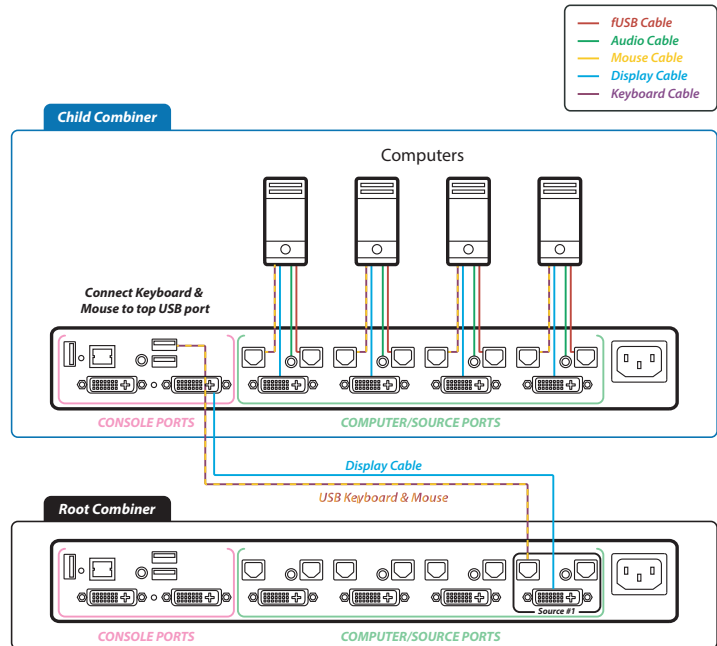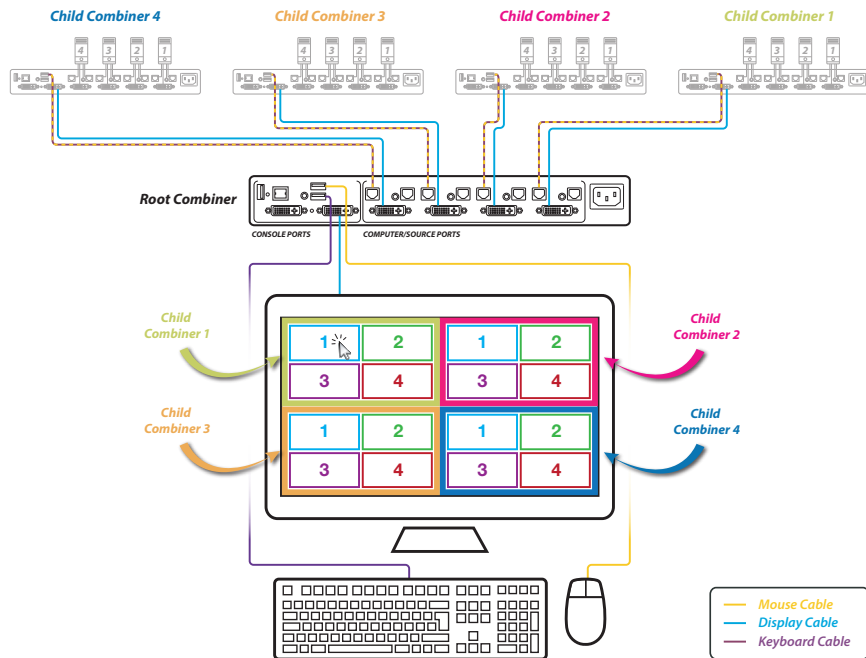
COMBINER CASCADING

Cascading Setup Scheme

Installation & Setup:

- **Step 1 -** Connect PCs to Child Combiners.
- **Step 2 -** Connect the Child Combiners to the Computer/Source ports on the Root combiner.
- **Step 3 -** Type: { **L CTRL | L CTRL | F11 | i** } to enable RIGHT CTRL on the Root combiner. Once done, LEFT CTRL keyboard shortcuts will apply on Child Combiners while RIGHT CTRL shortcuts will apply on the Root Combiner. Also, touch screen gestures on the Root Combiner will switch to the LEFT.

fUSB Cable
Audio Cable
Mouse Cable
Display Cable
Keyboard Cable

Child Combiner

Computers

Connect Keyboard &
Mouse to top USB port

CONSOLE PORTS

COMPUTER/SOURCE PORTS

Display Cable

USB Keyboard & Mouse

Root Combiner

CONSOLE PORTS

COMPUTER/SOURCE PORTS

Source #1

COMBINER CASCADING

- **Step 4 -** Enable VDT by typing { **CTRL | CTRL F11 | c** } key sequence on all combiners. Remember to use RIGHT CTRL on the Root Combiner.

- **Step 5 -** To easily distinguish between the Child and Root Combiner's System Modes it is recommended to change the Root Combiner mouse cursor color through the operation-taskbar setup -> system menu.

- **Step 6 -** Start working.

Child Combiner 4 *Child Combiner 3* *Child Combiner 2* *Child Combiner 1*

Root Combiner

CONSOLE PORTS   COMPUTER/SOURCE PORTS

Child Combiner 1   *Child Combiner 2*

Child Combiner 3   *Child Combiner 4*

Mouse Cable
Display Cable
Keyboard Cable

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