

KVM Combiner



Models:

SC42DU-N – 4P to 2P DVI Video KVM Combiner w/fUSB SC42DHU-N – 4P DVI to 2P HDMI Video KVM Combiner w/fUSB SC42PHU-N – 4P DP/HDMI to 2P HDMI Video KVM Combiner w/fUSB

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INTRODUCTION

HSL KVM Combiner

Interact with multiple computers presented on the same display at the same time using a single set of USB, audio, keyboard, video and mouse peripherals.

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

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

INSTALL ATION

Installing the Combiner

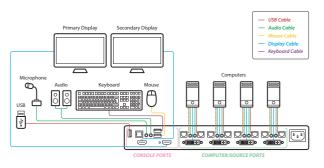
Step 1 - Cable Installation

- 1. Connect console port peripherals:
 - Connect video, keyboard, mouse and audio peripherals to the combiner's console ports. These will be shared between all computers.
 - Connect keyboard, mouse and audio peripherals to the KVM Combiner console ports. These will be shared between all sources.

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

2. Computer channel ports:

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



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

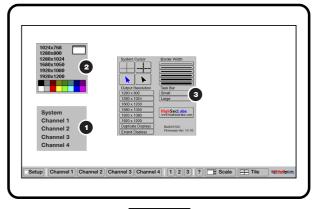
INSTALL ATION

Step 2 - 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:

- Main Admin Menu: select which setting to configure (system settings / channel settings).
- 2 Channel Settings: set the screen resolution and frame color of the selected channel number.
- System Settings: Change display output resolution, screen duplication, frame border width, operation-taskbar size and system cursor type.





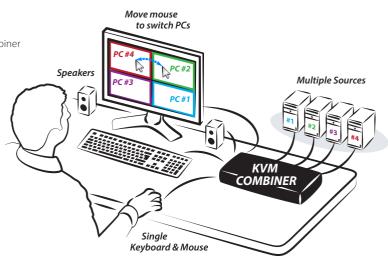
Note: 4 channel product illustrations shown throughout this manual are applicable to other KVM Combiner models.

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.

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.



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

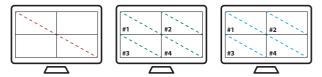
INSTALL ATION

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)

- 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.



Use the same screen resolution across all level

View applications in Ultra High Definition (UHD) 4K video quality.

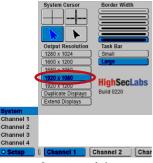
- Never compromise on video quality.
- Run graphic-intensive, ultrahigh definition applications on all combiner models.



• Upscale source computers input to UHD 4K output.

INSTALLATION

- Enter System mode: type: { CTRL | CTRL | 0 }. 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).

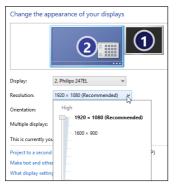


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INSTALL ATION

Step 5 – Working with Dual Displays

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

SECTIONS

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

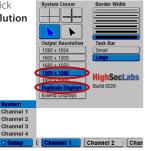
• Set Screen Duplication Mode: click Setup -> System -> Output Resolution and select **Duplicate Displays**.

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 rooms 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



"Extend" in Scale Mode



"Duplicate" in Scale Mode



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 operationpurposes, 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.



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.

OPERATION

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.

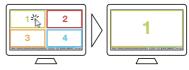
 Tile View mode: In Tile mode all sources are spread equally on the screen, the user can independently interact with each source and enlarge any given source to maximum screen size by clicking on it. • **Custom View mode:** Custom views allow rearranging, positioning and saving screens as needed by the user for future work.

Rearrange and Position screens as you want





Click to Enlarge



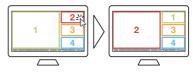
• Scale View mode: In Scale mode the user can interact with all sources while one source is enlarged and others are aligned vertically on the right screen side. Switch between the enlarged sources by clicking on any of the aligned sources on the right.

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.

Click to Enlarge



OPFRATION

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:

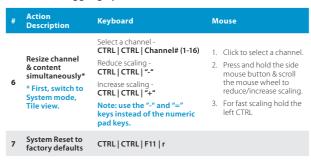
- 1. A complete list of toggling options is described further in this document.
- 2. Always use the left control key (CTRL) unless otherwise specified.
- 3. Do not use the numeric keypad for toggling shortcuts unless otherwise specified.
- 4. ALL KEYBOARD SHORTCUTS REFER TO QWERTY KEYBOARDS. In case 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	Click the side-mouse button to toggle to System mode. 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	In System mode, Tile view: Double click any tile. 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	Click the side-mouse button to toggle to System mode. Click Scale / Tile / Custom buttons on the operation-taskbar.

OPERATION

Most useful toggling options (Cont.):



Notes: 1. Keyboard shortcut k

- 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.	 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	Enter User Mode	CTRL CTRL u	Click the side-mouse button to toggle between System / User modes.	In Tile view: Tap 4 times on the uppermost right corner of the screen. In Scale view: Tap 4 times on the enlarged screen.
3	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).
4	Switch to Scale View	CTRL CTRL s	Click the side-mouse button to toggle between System / User modes. In System mode: Click "Scale" on the operation-taskbar.	In Tile view, User mode: Touch and hold the uppermost right corner of the screen for 4 seconds. 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	Click the side-mouse button to toggle between System / User modes. 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)

#	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# (1-16)	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	Click the side-mouse button to toggle to System mode. 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# (1-16)	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.

#	Action / Mode	Keyboard	Mouse	Touch Screen
13	Resize channel ⁵¹ 1. First, switch to System mode, Tile view. 2. See Actions 13a / 13b	N/A	 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.
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 ²³ * First, switch to System mode, Tile view.	1. Select a channel CTRL CTRL CTRL Channel# (1-16) 2. Reduce scaling CTRL "-" 3. 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.

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

#	Action / Mode	Keyboard	Mouse	Touch Screen
15	Drag & rearrange channel windows ⁵³ * First, switch to System mode, Tile view.	N/A	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.
16	Save custom views as presets ⁵⁴ 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	 First, switch to System mode, Tile view. 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	 First, switch to System mode, Tile view. Click the "Tile" button. 	 First, switch to System mode, Tile view. Tap on "Tile" button on the operation-taskbar.

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

#	Action / Mode	Keyboard	Mouse	Touch Screen
20	Dual Screen Duplicate Screens (On/Off)	CTRL CTRL F11 I		
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.

#	Action / Mode	Keyboard	Mouse	Touch Screen
24	Freeze channel layer ^{5,5}	CTRL CTRL F11 F (1-16)	N/A	N/A
25	Enable Right CTRL Toggles between the left & right CTRL keys for system commands	LCTRL LCTRL 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 already="" be="" in="" should="" tile="" view=""></you>
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 already="" be="" in="" should="" tile="" view=""></you>
3	Resize channel & content	Select a channel CTRL CTRL Channel# (1-16) 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.

OPERATION

5.3 Drag and Rearrange channel windows:



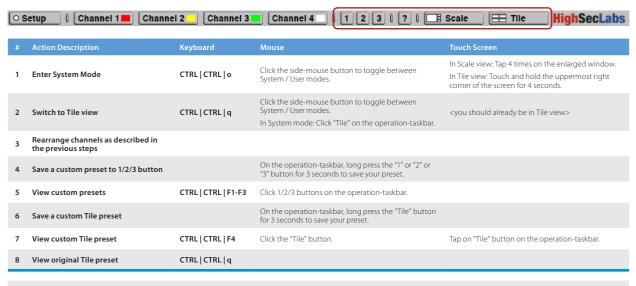
#	Action Description	Keyboard	Mouse	Touch Screen
1	Enter System Mode	CTRL CTRL o	Click the side-mouse button to toggle between System / User modes.	In Scale view: Tap 4 times on the enlarged window. In Tile view: Touch and hold the uppermost right corner of the screen for 4 seconds.
2	Switch to Tile 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 already="" be="" in="" should="" tile="" view=""></you>
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.

OPFRATION

5.4 Save custom views as presets:

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



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

OPERATION

5.5 Freeze channel layer

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 already="" be="" in="" should="" tile="" view=""></you>
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 1-16		
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# (1-16) or push the front panel buttons to switch back to Tile mode and then repeat the CTRL | CTRL | Channel# (1-16) sequence to enlarge another channel (see example below).

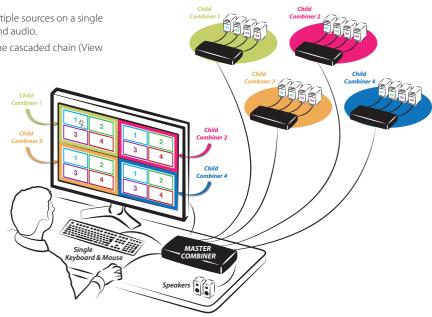
#	Action Description	Keyboard	Mouse	Touch Screen
1	Switch to Tile View	CTRL CTRL q	Click the side-mouse button to toggle between System / User modes. In System mode: Click "Tile" on the operation-taskbar.	In Scale view, User mode: Tap 4 times on the enlarged window. In Scale view, System mode: Tap 4 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 1-16 Enlarge Channel#2 CTRL CTRL 2 Revert to Tile View CTRL CTRL 1-16	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 multiple 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.

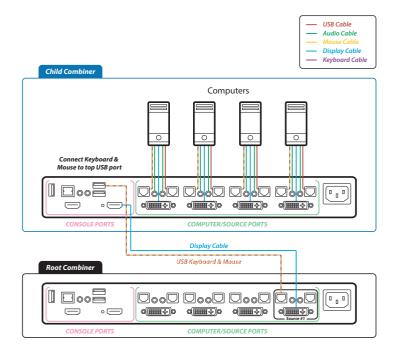


COMBINER CASCADING

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.



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 operationtaskbar setup -> system menu.
- Step 6 Start working.

