



Avocent® SV Switching System

Installer/User Guide

For SV240DPH, SV340DPH and SV2160DPH Switches

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit <https://www.vertiv.com/en-us/support/> for additional assistance.

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1 PRODUCT OVERVIEW

Vertiv™ Avocent® SV switches are field-proven KVM switching solutions. This switching system enables you to use a single keyboard, monitor and mouse to seamlessly access multiple computers.

The switches covered in this manual include:

- Avocent® SV240DPH switch
- Avocent® SV340DPH switch
- Avocent® SV2160DPH switch

1.1 Features and Benefits

The SV switching system offers several options depending on the model:

- Universal video connectors supporting HDMI or DisplayPort (DP) or DVI-D (with HDMI-to-DVI-D cable)
- Native video support up to UHD 4K (3840x2160) at 60 Hz
- Managed copy and paste between computers
- Lock audio and USB to specific computers
- Two front panel USB 3.0 accessory ports with one high-power charging port on 4-port switches
- One rear panel USB 2.0 accessory port on the 16-port switch

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2 BASIC OPERATION

Although installation of your SV switching system is complete, ensure you have one of the following compatible operating systems:

- Microsoft Windows
- Red Hat, Ubuntu or any other Linux platform
- Mac OS X version 10.3 or higher

The switches are compatible with stereo headphones and amplified stereo speakers.

2.1 Switch Overview

The following figures and tables show the controls and connectors on the front panel and connectors on the back of the switching systems covered in this manual.

Figure 2.1 Avocent® SV340DPH Switch

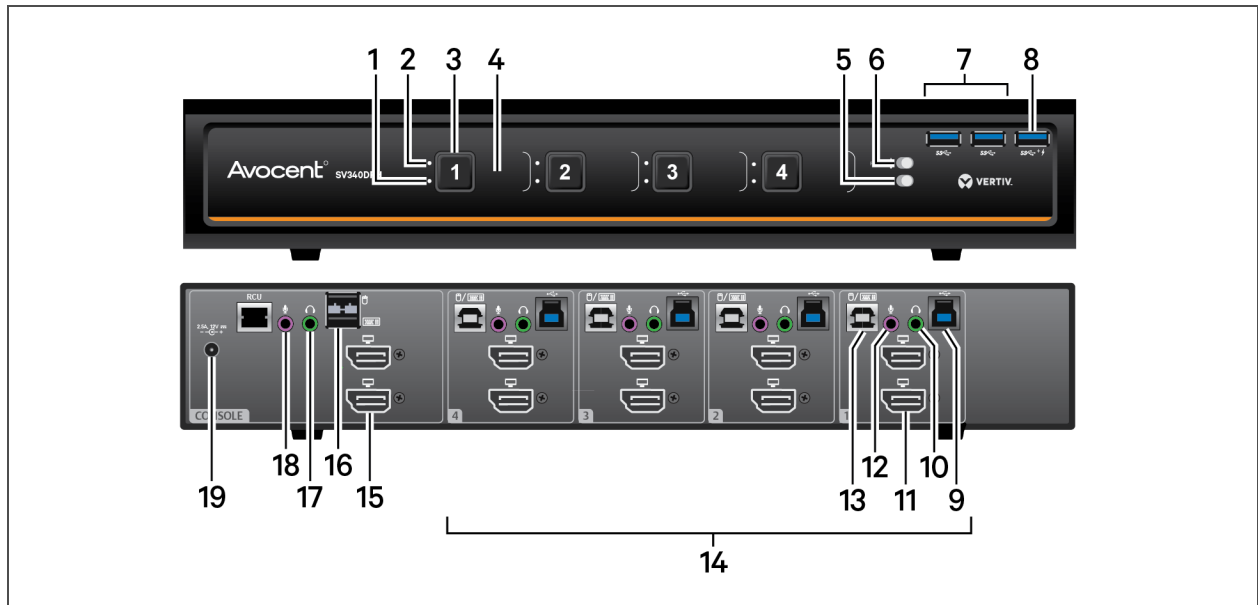


Table 2.1 Avocent® SV340DPH Switch Descriptions

| ITEM | DESCRIPTION | ITEM | DESCRIPTION |
|------|--|------|---|
| 1 | Audio lock indicators | 11 | DP/HDMI video connection for computer one |
| 2 | USB 3.0 accessory lock indicator | 12 | Microphone connection for computer one |
| 3 | Channel selector | 13 | Keyboard and mouse USB Type-B connection for computer one |
| 4 | Channel label | 14 | Computer port connections |
| 5 | Audio freeze toggle | 15 | Console DP/HDMI video output. |
| 6 | USB accessory freeze toggle | 16 | Console USB keyboard and mouse input |
| 7 | USB 3.0 accessory ports | 17 | Console speaker output |
| 8 | USB 3.0 accessory port (high-power charging) | 18 | Console microphone input |
| 9 | USB 3.0 Type-B connection for computer one | 19 | Power input |
| 10 | Speaker connection for computer one | | |

Figure 2.2 Avocent® SV2160DPH

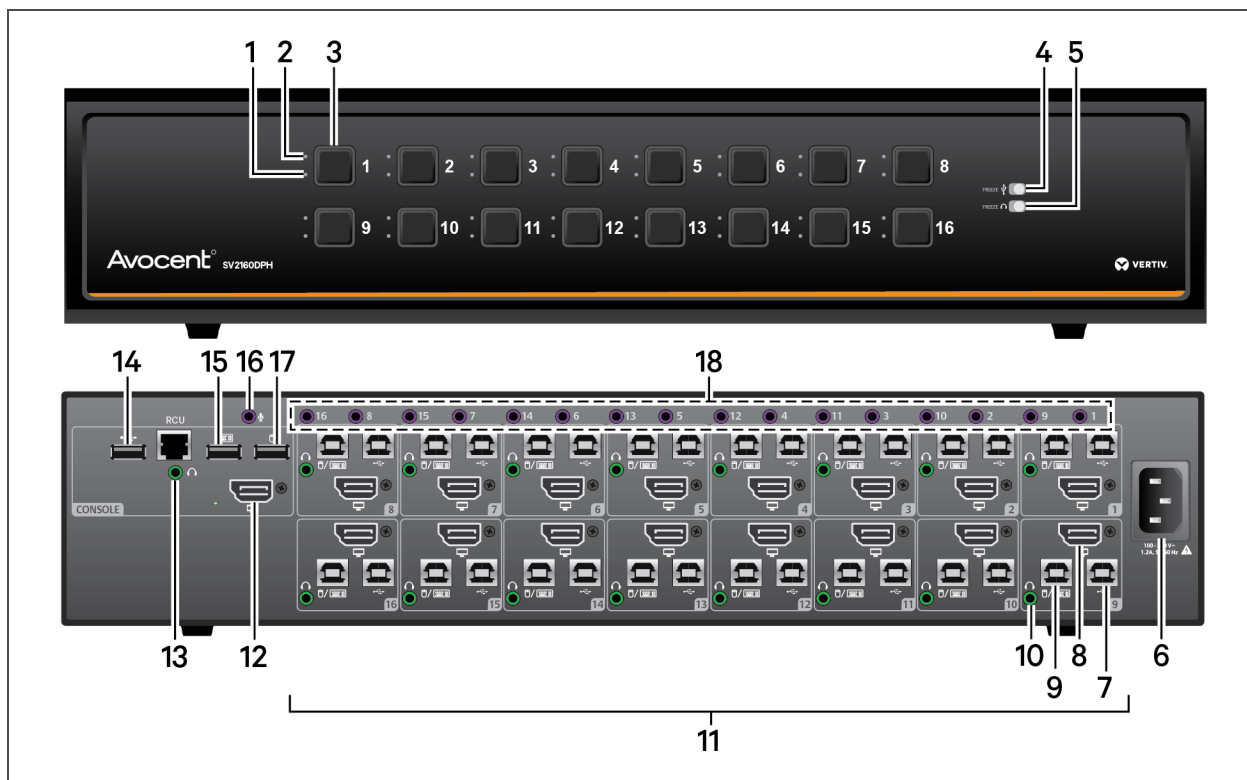


Table 2.2 Avocent® SV2160DPH Descriptions

| ITEM | DESCRIPTION | ITEM | DESCRIPTION |
|------|---|------|-------------------------------------|
| 1 | Audio lock indicators | 10 | Speaker connection for computer 9 |
| 2 | USB 2.0 accessory lock indicator | 11 | Computer port connections |
| 3 | Channel selector | 12 | Console DP/HDMI video output. |
| 4 | USB accessory freeze toggle | 13 | Console speaker output |
| 5 | Audio freeze toggle | 14 | Console USB 2.0 accessory input |
| 6 | Power input | 15 | Console USB keyboard input |
| 7 | USB 2.0 accessory Type-B connection for computer 9 | 16 | Console microphone input |
| 8 | DP/HDMI video connection for computer 9 | 17 | Console USB mouse input |
| 9 | Keyboard and mouse USB Type-B connection for computer 9 | 18 | Microphone connection for computers |

2.2 Control Options

LED indicators on the front and back panels of the switch allow you to view the status of the switch and its connected computers, displays and peripherals.

NOTE: When the switch is turned on, the selected channel is computer one.

2.2.1 Important notes about keyboard shortcuts

- Always use the left control (CTRL) key unless otherwise specified.
- Keyboard shortcut keys are to be pressed sequentially.
- Do not use the numeric keypad for toggling shortcuts unless otherwise specified.
- All keyboard shortcuts refer to QWERTY keyboards. In case a non-qwerty keyboard is in use, keep using the QWERTY layout.

2.2.2 Channel selection

After turning on the switch, the default channel is channel one. You can select which computer to operate using the front panel push-buttons or keyboard shortcuts. The LED number illuminates to indicate which computer is currently selected. Allow approximately one second for the video signal to sync after switching computers.

After selecting a new channel, the mouse cursor is positioned in the center of the selected computer display. When you select a new channel, the mapping for the keyboard, mouse, audio and USB device also changes to the specified channel.

To switch between computers:

Select the computer by pressing the corresponding front panel push-button on the front of the switch.

-or-

Use keyboard shortcuts.

- For channels 1-9, enter **L-CTRL | L- CTRL | <1-9>**
- For channel 10, enter **L-CTRL | L- CTRL | 0 (zero)**
- For channels 11-16, enter **L-CTRL | L- CTRL | <F1-F6>**

2.3 Cursor Navigation Switching (CNS)

By default, the switch confines mouse cursor movement to the screen of the selected computer. In this mode, you must use the front panel channel selection buttons or keyboard shortcut to switch between computers.

Alternatively, the switch can be configured to switch channels when the mouse moves across a display border, called Cursor Navigation Switching (CNS). When the mouse cursor moves across the display border from one computer to another, the keyboard, mouse, audio and USB device mapping switch accordingly.

To enable Cursor Navigation Switching:

Press **L-CTRL | L-CTRL | F11 | c**.

To also switch video with CNS, enable video follows mouse:

Press **L-CTRL | L-CTRL | F**

To disable Cursor Navigation Switching:

Press **L-CTRL | L-CTRL | F11 | b**

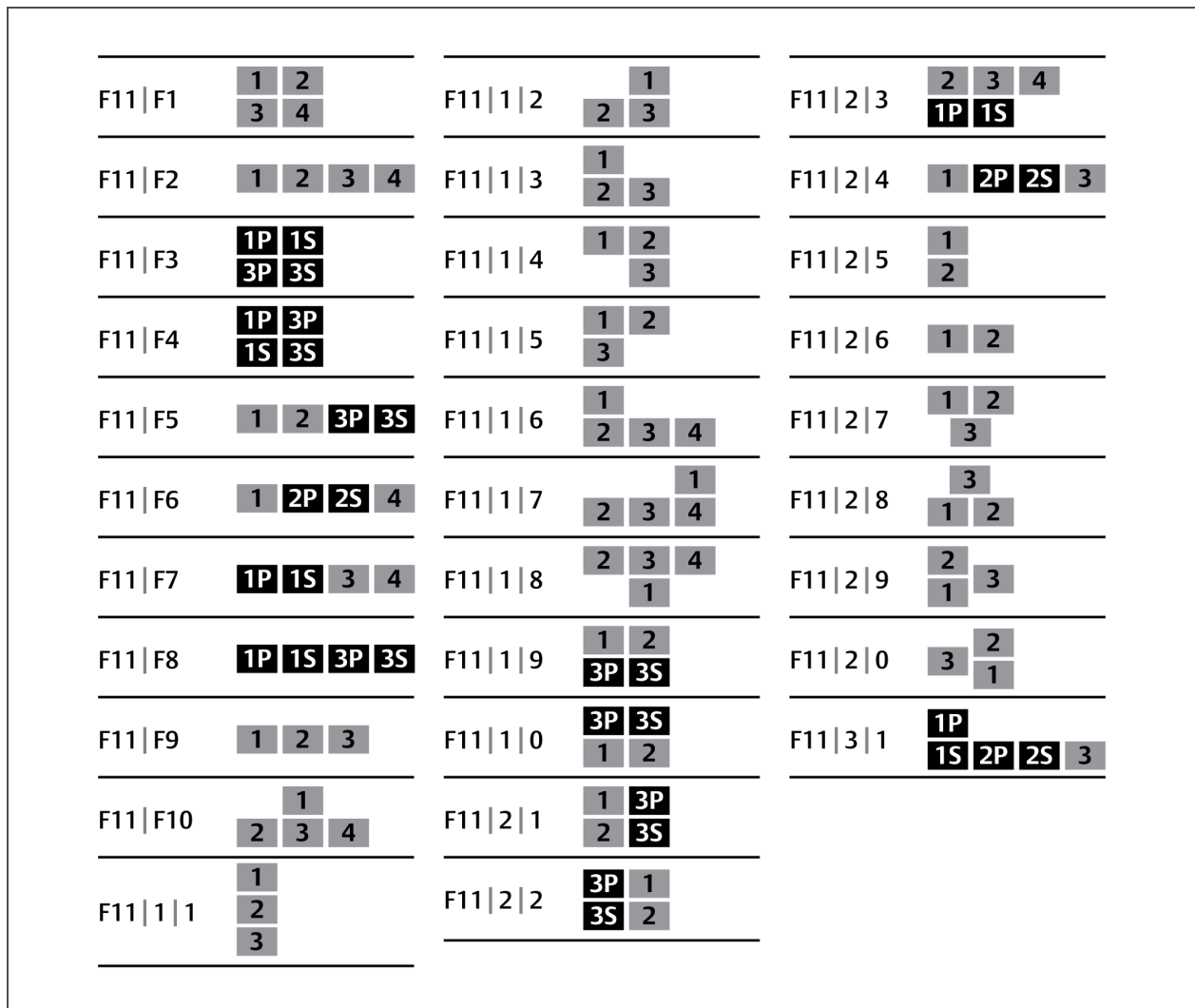
To disable video follows mouse:

Press **L-CTRL | L-CTRL | F**

The switches are configured to support one display per channel; however, when CNS is enabled, you can set up a multiple display configuration and seamlessly switch between displays by moving the mouse cursor to the desired display. The switch configuration must match the physical positioning of the displays. You can use a KM Preset to configure support of more than one display per channel. The following images detail the different preset monitor configurations.

NOTE: In the configurations, gray indicates a single computer and black indicates a multi-display computer. P indicates the primary display and S indicates the secondary display in a multi-display configuration.

Figure 2.3 Four-Port KVM/KM Presets



NOTE: The SV2160DPH does not support KVM/KM presets.

2.4 Keyboard and Mouse Settings

2.4.1 Mouse settings

When CNS is enabled, you can freeze mouse functionality on a selected channel to prevent inadvertently switching channels if the mouse approaches the screen border. The prevent transition feature allows you to use the mouse to move objects such as windows and icons on a screen without unintentionally dragging the object to another display. When the prevent transition feature is enabled and the left mouse button is clicked, you can move objects only within the active display.

To freeze the mouse on a selected channel:

Press L-CTRL | L-CTRL | F11 | f.

To unfreeze the mouse on a selected channel:

Press L-CTRL | L-CTRL | F11 | u.

2.5 USB Accessory Port

USB accessory ports provide access and connectivity to external USB devices to ensure quick data transfer. The 4-port switches offer three USB 3.0 ports and one port (labeled with a lightning bolt) is a high-power port allowing charging of USB devices such as a phone or tablet. The 16-port switch has one USB 2.0 port.

2.5.1 Using USB accessory lock

Freezing the USB accessory allows the user to switch to another computer and keep the USB accessory on the current channel.

To freeze the USB accessory channel:

1. Select the channel you want to freeze.
2. On the front panel, switch the USB port Freeze toggle to FREEZE mode. The channel indicator will illuminate on the selected channel and on the freeze toggle.

NOTE: If you are on a channel that has a USB port enabled and you switch to a channel that is not using the USB port, then you will lose the connection and the ability to freeze the information. You must switch back to a USB-enabled channel to reactivate the feature.

2.6 Managed Copy and Paste

The managed copy and paste feature enables copying of files and text from one computer to another computer for seamless integration of sources.

The managed copy and paste feature requires a software agent. To download, visit the product page at www.vertiv.com.

2.7 System Settings

2.7.1 Factory reset

To clear all settings and return to the factory defaults:

Press L-CTRL | L-CTRL | F11 | r.

NOTE: When the switch is restored to factory default settings, all user-defined configurations are erased and the keyboard and mouse are switched to computer one. The front panel LEDs blink in unison to indicate a successful factory reset.

2.7.2 Terminal menu

The switch has a terminal menu that can be accessed for advanced configuration.

To log in to the terminal menu:

1. Select an active computer channel on the switch.
2. Open Microsoft Notepad or another text editor on the selected computer.
3. Enter **L-CTRL | R-CTRL | t** to initiate the terminal menu. The switch inputs character into the text editor.

To use the terminal menu, type the number of the desired option using the numbers across the top of the keyboard. The numeric pad is not supported.

NOTE: While the switch is in the terminal menu, keystrokes are not sent to the selected computer until you enter the number into the text editor for Exit Terminal Mode.

2.7.3 System configuration

To use the following commands, you must first access the terminal menu.

To enable/disable the copy and paste function:

Enter **L-CTRL | R-CTRL | q**

To enable/disable consumer/multimedia key support:

Enter **L-CTRL | R-CTRL | k**

NOTE: This will enable some multimedia keys on your keyboard, such as volume up/down/mute, play, track skip, etc. Custom or application keys may not be supported.

To enable/disable touch screen support:

Enter **CTRL-L | CTRL-R | s**

2.8 Interchangeable KVM to KM Functionality

In KVM mode 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 the keyboard and mouse are shared.

To change from KVM to KM mode:

1. Disconnect the display from the KVM console port.
2. Connect each computer directly to a separate display while keeping the keyboard, mouse, USB and audio peripherals connected to the KVM.
3. Change the mouse mode by typing **L-CTRL | L-CTRL | F11 | c**.

To change from KM to KVM mode:

1. Connect the display to the KVM console port.

2. Connect each computer to the corresponding KVM computer video port.
3. Change the mouse mode by typing **L-CTRL | L-CTRL | F11 | b**.

APPENDICES

Appendix A: Keyboard Shortcuts

Table A.1 Keyboard Shortcuts

| DESCRIPTION | SHORTCUT |
|---|---------------------------------|
| Reset to factory defaults | L-CTRL L-CTRL F11 r |
| Select channel [1-9] | L-CTRL L-CTRL [1-9] |
| Select channel 10 | L-CTRL L-CTRL 0 (zero) |
| Select channel [11-16] | L-CTRL L-CTRL [F1-F6] |
| Disable CNS (default) | L-CTRL L-CTRL F11 b |
| Enable CNS | L-CTRL L-CTRL F11 c |
| Enable video follows mouse | L-CTRL L-CTRL f |
| Freeze mouse to current screen | L-CTRL L-CTRL F11 f |
| Unfreeze mouse on current screen | L-CTRL L-CTRL F11 u |
| Increase mouse speed | L-CTRL L-CTRL F11 + |
| Decrease mouse speed | L-CTRL L-CTRL F11 - |
| Set current channel to relative mouse only | L-CTRL R-CTRL b |
| Set current channel to absolute mouse only | L-CTRL R-CTRL c |
| Access the terminal menu | L-CTRL R-CTRL t |
| Enable/disable managed copy and paste (disabled by default) Note: Requires accessing the terminal menu first | L-CTRL R-CTRL q |
| Enable/disable consumer/multimedia keyboard support (disabled by default) Note: Requires accessing the terminal menu first | L-CTRL R-CTRL k |
| Enable/disable touch screen support (disabled by default) Note: Requires accessing the terminal menu first | L-CTRL R-CTRL s |
| Select KM preset [x] | L-CTRL L-CTRL F11 <x> |
| Enable the switch to load a custom preset | L-CTRL R-CTRL |
| Switch to custom preset | L-CTRL L-CTRL F11 F12 |
| Temporarily switch to relative mouse mode | L-CTRL + Shift [press and hold] |
| Enable or disable shortcut forwarding | L-CTRL R-CTRL End |

Appendix B: Technical Specifications

Table B.1 Technical Specifications

| ITEM | SV240DPH | SV340DPH | SV2160DPH |
|---------------------------------|--|---------------------------------------|---|
| Computers | | | |
| Ports | 4 | 4 | 16 |
| Video Type | 1 x DP / HDMI universal port | 2 x DP / HDMI universal port | 1 x DP / HDMI universal port |
| Max resolution | UHD 4K (3840x2160) @ 60Hz | | |
| Keyboard and Mouse | 1 x USB 2.0 Type B | | |
| USB Accessory Port | 1 x USB 3.0 Type B | | 1 x USB 2.0 Type B |
| Analog Audio | 2 x 3.5mm Speaker & Microphone | | |
| Console | | | |
| Video Type | 1 x DP / HDMI universal port | 2 x DP / HDMI universal port | 1 x DP / HDMI universal port |
| Keyboard and mouse | 2 x USB 2.0 Type A | | |
| USB Accessory Port | 3 x USB 3.0 Type A | | 1 x USB 2.0 Type A |
| Analog Audio | 2 x 3.5mm Speaker & Microphone | | |
| Console | | | |
| Dimensions (WxDxH) | 13.7 x 5.0 x 1.7 in 348 x 127 x 43 mm | 13.7 x 5.0 x 2.2 in 348 x 127 x 56 mm | 17.2 x 8.8 x 3.5 in 439 x 225 x 89 mm |
| Weight | 3.0 lbs 1.5 Kg | 3.7 lbs 1.9 Kg | 10.8 lbs 4.8 kg |
| Mounting Option | Desk Mount - DMK-09 | | Rack Mount Included |
| Environmental Conditions | | | |
| Operating Temperature | 0 to 40C / 32 to 104 F | | |
| Storage Temperature | -20 to 60C / -4 to 140 F | | |
| Humidity | 0 to 80% RH, non-condensing | | |
| Console | | | |
| AC Input Voltage | 100 – 240V AC | | |
| Power Supplies | 1 x external, 2.5A Max | | 1 x Internal |
| Power Connector | Wall-mounted power supply with user-interchangeable localized plug blades. | | IEC320 C14 to IEC320 C13 power cord (6 foot), with user interchangeable C14 to localized socket plugs |
| Regulatory | | | |
| Regulatory Certifications | FCC class A, CE, TUV US, TUV Canada, RCM, VCCI | | |
| Standard Product Warranty | 2 Years; additional warranty terms available | | |
| Design & Assembly | Huntsville, AL USA | | |

Table B.2 Computer Cables

| COMPUTER VIDEO | VIDEO TYPE | LENGTH (FT / M) | SINGLE HEAD | DUAL HEAD |
|----------------|---------------|-----------------|-------------|-----------|
| DP | DP-to-DP | 6 / 1.8 | CBL0122 | CBL0124 |
| | | 10 / 3.0 | CBL0123 | CBL0125 |
| Mini DP | mDP-to-DP | 10 / 3.0 | CBL0198 | CBL0199 |
| HDMI | HDMI-to-HDMI | 6 / 1.8 | CBL0126 | CBL0128 |
| | | 10 / 3.0 | CBL0127 | CBL0129 |
| DVI-D | HDMI-to-DVI-D | 10 / 3.0 | CBL0196 | CBL0197 |

NOTE: USB accessory port requires a separate USB 2.0 or USB 3.0 extension cable for each computer

Table B.3 Console Cables

| DISPLAY VIDEO | CABLE TYPE (6FT / 1.8M) | DISPLAY VIDEO |
|---------------|---|---------------|
| DP | DP-to-DP | CBL0188 |
| HDMI | HDMI-to-HDMI | CBL0189 |
| DVI-D | HDMI-to-DVI-D (DVI-D display to HDMI KVM) | CBL0191 |

Table B.4 Accessories

| PART NUMBER | DESCRIPTION | USAGE |
|-------------|--|---|
| CBL0185 | 10ft USB-C (PC) to Single Display DP (KVM) adapter cable +ETH +PWR | Connect USB-C single-head computer to Desktop KVM |
| CBL0186 | 10ft USB-C (PC) to Dual Display DP (KVM) adapter cable +ETH +PWR | Connect USB-C dual-head computer to Desktop KVM |
| AFP0004 | 4-Port Remote Active Front Panel | Remotely select computer ports on 4-port KVM |
| AFP008 | 8-port Remote Active Front Panel | Use with AFPSPLITTER to remotely select computer ports on an SV2160DPH switch |
| AFPSPLITTER | AFP Cable Splitter adapter for the SV2160DPH switch | Connect two AFP0008 Remote Switch Panels to a SV2160DPH to remotely select up to 16 ports |

Appendix C: Troubleshooting

When power is turned on to the switch, it performs a self-test to verify normal operation. If the switch fails the self-test procedure, all channel LED buttons flash on and off once and a combination of LEDs illuminate. The various combinations of illuminated LEDs indicate the fault with the switch. After a failed self-test, the switch becomes inoperable until the fault is resolved.

C.1 General

The following table lists general faults, the fault indicators and the actions to resolve each fault.

Table C.1 General Switch Faults

| FAULT | INDICATOR | RESOLUTION |
|--|---|--|
| The switch did not pass the self-test. | All channel LED buttons flash on and off once and a combination of LEDs illuminate to indicate the fault. | Turn power off and on to the switch. |
| The switch is not receiving power. | The displays do not show video output and none of the front panel LEDs illuminate. | Ensure the power cable is intact and connected to the switch and to the power source. If the cable is damaged, replace it. |

C.2 Video

The following table lists video faults, the fault indicators and the action to resolve each fault.

Table C.2 Video Faults

| FAULT | INDICATOR | RESOLUTION |
|---|--|--|
| The connected video display is not qualified. | The video diagnostic LED flashes green and the display is inoperable. | Turn off and disconnect the non-qualified display and connect and turn power on to a qualified display. |
| The displays or the computers are not connected to the switch properly or the connecting cables or ports are damaged. | The displays do not show video output on any channel and the display diagnostic LED does not appear solid green. | Ensure the displays are properly connected to the switch and the displays and connecting cables are not damaged. Replace damaged cables. If the displays or connecting cables are damaged, replace the damaged parts. If the issue persists, check the displays' on-screen menu to ensure the correct source is selected and verify the video mode and computer's video mode are the same. If the problem persists and the LED does not illuminate solid green, change the entire display unit or contact Technical Support. |
| A specific computer is not connected to the switch properly or the connecting cable or port is damaged. | The display does not show video output for a specific channel. | Ensure the connecting cable between the computer and the switch is secured and not damaged. Replace damaged cables. Ensure the displays are compatible with the computer resolution and refresh rate settings. Verify the video output is available and an image is shown when the display unit is connected directly to the computer. If the problem persists, turn power off and on to the switch, reboot the computer, replace the display unit or contact Technical Support. |
| The displays or computers are not connected to the switch properly or the connecting cables are not compatible with the displays. | Some or all channels are experiencing poor video image quality and the display diagnostic LED does not appear solid green. | Ensure the displays are properly connected to the switch and the displays and connecting cables are compatible with the displays and not damaged. Replace damaged cables. Video cable length should not exceed 15 feet. Ensure the displays are compatible with the computer resolution and refresh rate settings. Lower the video resolution of the computer. Verify the video output is available and an image is shown when the display unit is connected directly to the computer. If the problem persists, turn power off and on to the switch, reboot the computers and displays, replace the video displays or contact Technical Support. |

C.3 Keyboard

The following table lists keyboard faults, the fault indicators and the action to resolve each fault.

Table C.3 Keyboard Faults

| FAULT | INDICATOR | RESOLUTION |
|--|---|---|
| The keyboard is not connected to the switch properly or the keyboard cable or port is damaged. | The keyboard does not work on any channels. | <p>Ensure the keyboard is properly connected to the switch and the USB cable between the keyboard and the switch is not damaged. If the issue persists, connect the keyboard to a different port or use a different standard, non-wireless, qualified keyboard. Ensure the driver for the keyboard is installed on the computer.</p> <p>NOTE: If the computer is returning from standby mode, allow up to one minute for the computer to regain keyboard functionality.</p> |
| The keyboard, mouse and video cables are connected to two different computers. | The keyboard and mouse are not working on two channels. | Ensure the keyboard/mouse and video cables are connected to the correct ports on the switch. For example, the keyboard and mouse cable and the video cable for computer 1 should be connected to ports specifically designated for computer 1. |
| The computer does not recognize the connected keyboard. | The keyboard does not work on one channel. | Use the computer's Device Manager wizard to troubleshoot and resolve the issue. |
| The connected keyboard is not qualified or not connected to the switch properly | The keyboard is non-functional on any channel and you are unable to produce keystrokes on the screen when using the keyboard. | Ensure the keyboard is properly connected to the switch and the USB cable between the keyboard and the switch is not damaged. If damaged, replace the cable. Ensure the keyboard is a qualified device. If not, disconnect the non-qualified keyboard and connect a qualified keyboard. Verify that the keyboard works connected directly to the computer or when connected to a different USB port. If the problem persists, turn power off and on to the switch, reboot the computer, and replace the keyboard unit or contact Technical Support. |
| The connected keyboard is not compatible with the switch. | Certain keyboard functions are inoperable once connected to the switch. | Determine if the connected keyboard is compatible with the switch. Some non-standard keyboard functions are disabled by the switch for security purposes. Contact Technical Support for compatibility information. |

C.4 Mouse

The following table lists mouse faults, the fault indicators and the action to resolve each fault.

Table C.4 Device Faults

| FAULT | INDICATOR | RESOLUTION |
|--|---|---|
| The connected mouse is not qualified. | The mouse is non-functional and the mouse cursor is frozen on the screen. You are unable to use the mouse to move the mouse cursor. | Disconnect the non-qualified mouse and connect a qualified mouse. |
| The mouse is not plugged into the correct port. | The mouse does not work on any channels but the keyboard works. | Verify that the mouse is plugged into the mouse port and the connecting cable is not damaged. Plug the mouse into the mouse port if it is connected to a non-mouse port and replace the cable if it is damaged. |
| The mouse is not connected to the switch properly or the mouse cable or port is damaged. | The mouse does not work on any channels. | Ensure the mouse is properly connected to the switch and the USB cable between the mouse and the switch is not damaged. If the issue persists, connect the mouse to a different port or use a different standard, non-wireless, qualified mouse. Ensure the driver for the mouse is installed on the computer. NOTE: If the computer is returning from standby mode, allow up to one minute for the computer to regain mouse functionality. |
| The computer does not recognize the connected mouse. | The mouse does not work on one channel. | Use the computer's Device Manager wizard to troubleshoot and resolve the issue. |





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