Cybex™ SC Switching System

Installer/User Guide

For SC800/900 DPH, DPHC and DVI Series Switches and SCKM140PP4 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™ Cybex™ SC switches are field-proven, secure, KVM and KM switching solutions with special support for government agencies. This switching system allows users to switch safely between computers operating at different classification levels from a single set of peripherals, providing continuous access to critical data. With multiple security features, the secure design prevents the transfer of data between the connected computers, ensuring data security is not compromised.

WARNING! This product is equipped with active intrusion protection and tamper-evident seals. Tampering with the switch or breaking/removing the seals will permanently disable it and void the warranty. If the enclosure appears to have been tampered with or if all the port LEDs flash continuously, please contact Technical Support.

1.1 Products Supported

KM Models:

- Vertiv™ Cybex™ SCKM140PP4 secure 4-port KM switch

KVM Models:

- Vertiv™ Cybex™ SC820DPH/920DPH secure 2-port universal DP/H KVM switches
- Vertiv™ Cybex™ SC840DPH/845DPH/940DPH/945DPH secure 4-port universal DP/H KVM switches
- Vertiv™ Cybex™ SC840DPHC/845DPHC/940DPHC/945DPHC secure 4-port USB-C and universal DP/H KVM switches
- Vertiv™ Cybex™ SC840DVI/940DVI secure 4-port DVI-D DP/H KVM switches
- Vertiv™ Cybex™ SC985DPH secure 8-port universal DP/H KVM switch

1.2 Features and Benefits

The Vertiv Cybex SC switching system offers the following options, depending on the model:

- Designed to meet Common Criteria Protection Profile (PP) for Peripheral Sharing Device (PSD) v.4.0
- Designed to meet Evaluation Assurance Level (EAL) 4+
- Universal video connectors supporting HDMI 1.4 or Display Port (DP) 1.2 or DVI-D (with HDMI-to-DVI-D cable)
- Native video support up to UHD 4K (3840x2160) at 60 Hz
- Display classified and unclassified information without compromising security
- Filters unwanted USB devices
- Dedicated Peripheral Port (DPP) for secure connection to USB peripherals including two-factor authentication devices such as CAC smart card readers, fingerprint readers, facial recognition, and so on
- Lock audio and DPP to specific computers
- Prevents information leaks, transfer or crosstalk between adjacent ports and filters ultrasonic audio frequencies via unidirectional optical data diodes
- Isolated ports on the switch provide discrete processing paths to each computer
- USB peripheral isolation via unidirectional optical data diodes controlling data flow from devices to host only
- Unidirectional audio data diode that allows sound to travel in one direction from the PC to the speaker and prevents eavesdropping

1.3 System Requirements

Ensure a minimum of one of the following operating systems is installed on the computers to be connected:

- Microsoft Windows 8.1 and 10 or higher
- Red Hat, Ubuntu or any other Linux platform
- Apple macOS Catalina version 10.15.5 or higher

2 Basic Operation

The keyboard and mouse console ports support only USB HID (Human Interface Device) keyboards and mice. Non-standard keyboards, keyboard with integrated USB hubs, or keyboards with other USB-integrated devices may not be supported.

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

NOTE: Do not connect a microphone device to the switch's audio output port. Opt to use headset devices that do not include microphone capabilities.

Wireless devices and non-standard keyboards with integrated USB hubs and other USB-integrated devices are not fully supported for security reasons.

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.

NOTE: The Vertiv™ Cybex™ SC800 series switch models are single-head devices. They have identical ports, except for the number of ports on the device. The Vertiv™ Cybex™ SC900 series switch models are dual-head devices.

Figure 2.1 SCKM140PP4 Switch

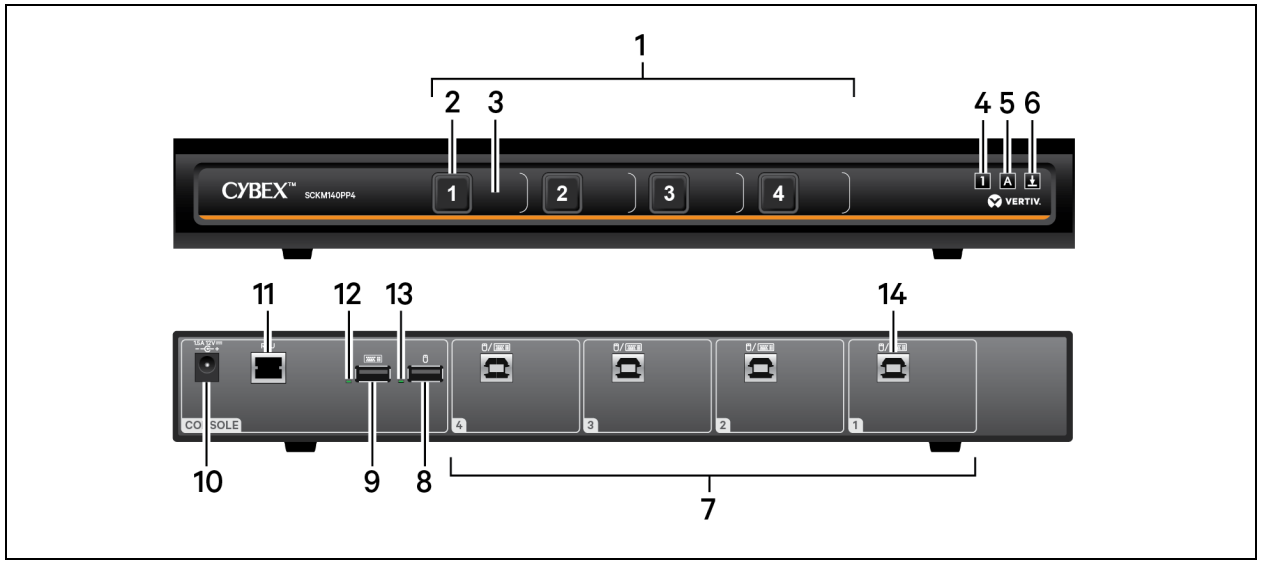


Table 2.1 SCKM140PP4 Switch Descriptions

Item	Description	Item	Description
1	Computer channel 1-4 selectors	8	CONSOLE mouse USB Type-A port
2	Channel selector	9	CONSOLE keyboard USB Type-A port
3	Channel label	10	Power input
4	Num Lock indicator; illuminates when activated	11	RCU port; used with AFP
5	Caps Lock indicator; illuminates when activated	12	Console keyboard status LED indicator
6	Scroll Lock indicator; illuminates when activated	13	Console mouse status LED indicator
7	Computer keyboard/mouse USB Type-B connector	14	Keyboard and mouse USB Type-B connection for computer 1

Figure 2.2 SC920DPH Switch

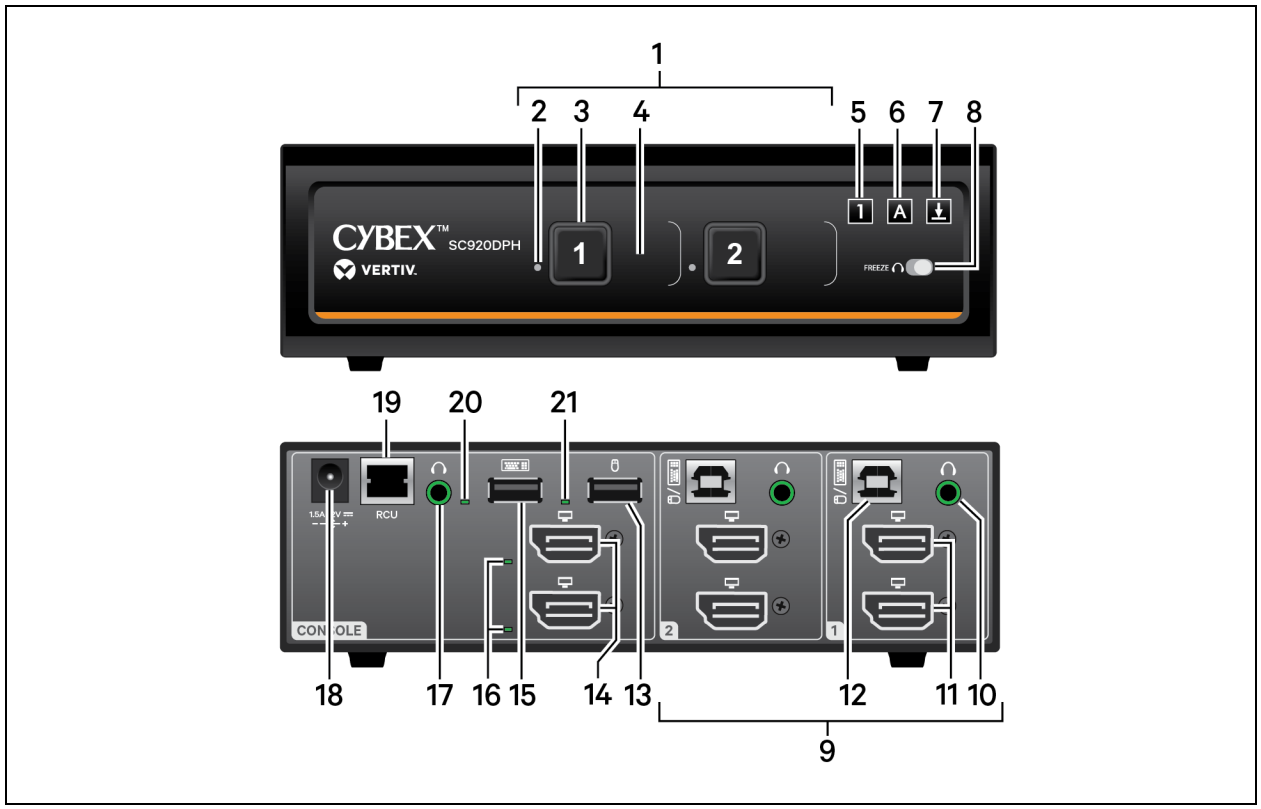


Table 2.2 SC920DPH Switch Descriptions

Item	Description	Item	Description
1	Computer channel 1-2 selectors	12	Keyboard and mouse USB Type-B connection for computer 1
2	Audio freeze indicator	13	CONSOLE mouse USB Type-A input
3	Channel selector	14	Console DP/HDMI video output
4	Channel label	15	CONSOLE keyboard USB Type-A input
5	Num Lock indicator; illuminates when activated	16	Console video diagnostic LED indicator
6	Caps Lock indicator; illuminates when activated	17	CONSOLE speaker output
7	Scroll Lock indicator; illuminates when activated	18	Power input
8	Audio freeze toggle	19	RCU port; used with AFP
9	Computer port connectors	20	Console keyboard status LED indicator
10	Speaker connection for computer 1	21	Console mouse status LED indicator
11	DP/HDMI video input for computer 1		

Figure 2.3 SC945DPH Switch

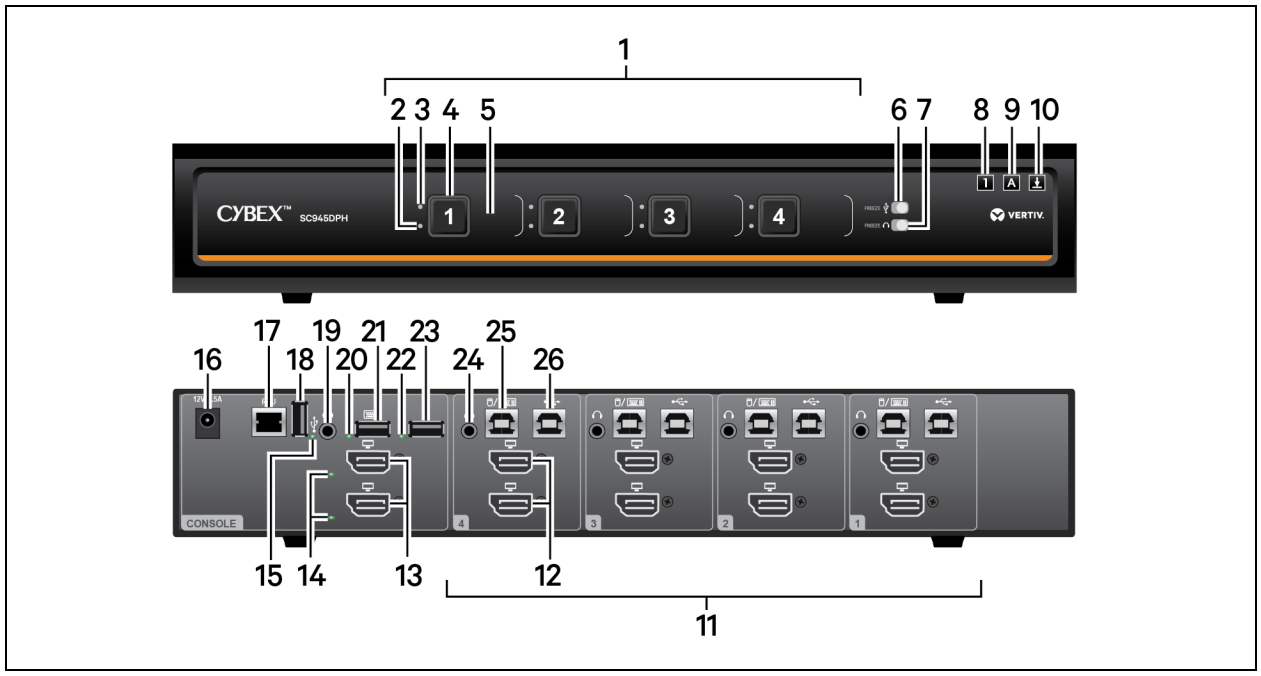


Table 2.3 SC945DPH Switch Descriptions

Item	Description	Item	Description
1	Computer channel 1-4 selectors	14	Console video diagnostic LED indicator
2	Audio lock indicator	15	Console USB status LED indicator
3	DPP lock indicator	16	Power input
4	Channel selector	17	RCU port; used with AFP
5	Channel label	18	Console DPP USB Type-A input
6	DPP freeze toggle	19	Console speaker output
7	Audio freeze toggle	20	Console keyboard status LED indicator
8	Num Lock indicator; illuminates when activated	21	Console keyboard USB Type-A input
9	Caps Lock indicator; illuminates when activated	22	Console mouse status LED indicator
10	Scroll Lock indicator; illuminates when activated	23	Console mouse USB Type-A input
11	Computer port connectors	24	Speaker connection for computer 4
12	DP/HDMI video input for computer four	25	Keyboard and mouse USB Type-B connection for computer 4
13	Console DP/HDMI video output	26	DPP USB Type B connection for computer 4

Figure 2.4 SC945DPHC Switch

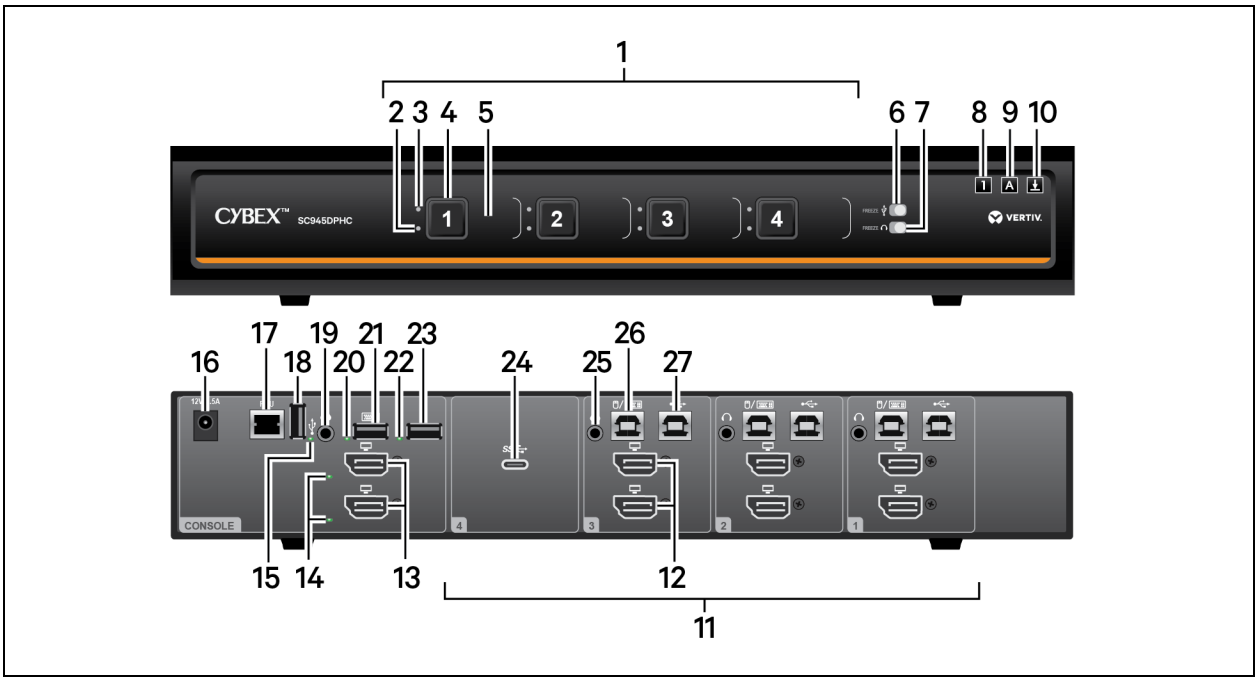


Table 2.4 SC945DPHC Switch Descriptions

Item	Description	Item	Description
1	Computer channel 1-4 selectors	15	Console USB status LED indicator
2	Audio lock indicator	16	Power input
3	DPP lock indicator	17	RCU port; used with AFP
4	Channel selector	18	Console DPP USB Type-A input
5	Channel label	19	Console speaker output
6	DPP freeze toggle	20	Console keyboard status LED indicator
7	Audio freeze toggle	21	Console keyboard USB Type-A input
8	Num Lock indicator; illuminates when activated	22	Console mouse status LED indicator
9	Caps Lock indicator; illuminates when activated	23	Console mouse USB Type-A input
10	Scroll Lock indicator; illuminates when activated	24	USB-C computer connection on channel 4
11	Computer port connectors	25	Speaker connection on channel 4
12	DP/HDMI video input for computer three	26	Keyboard and mouse USB Typ- B connection for computer 4
13	Console DP/HDMI video output	27	DPP USB Type-B connection for computer 4
14	Console video diagnostic LED indicator		

Figure 2.5 SC985DPH Switch

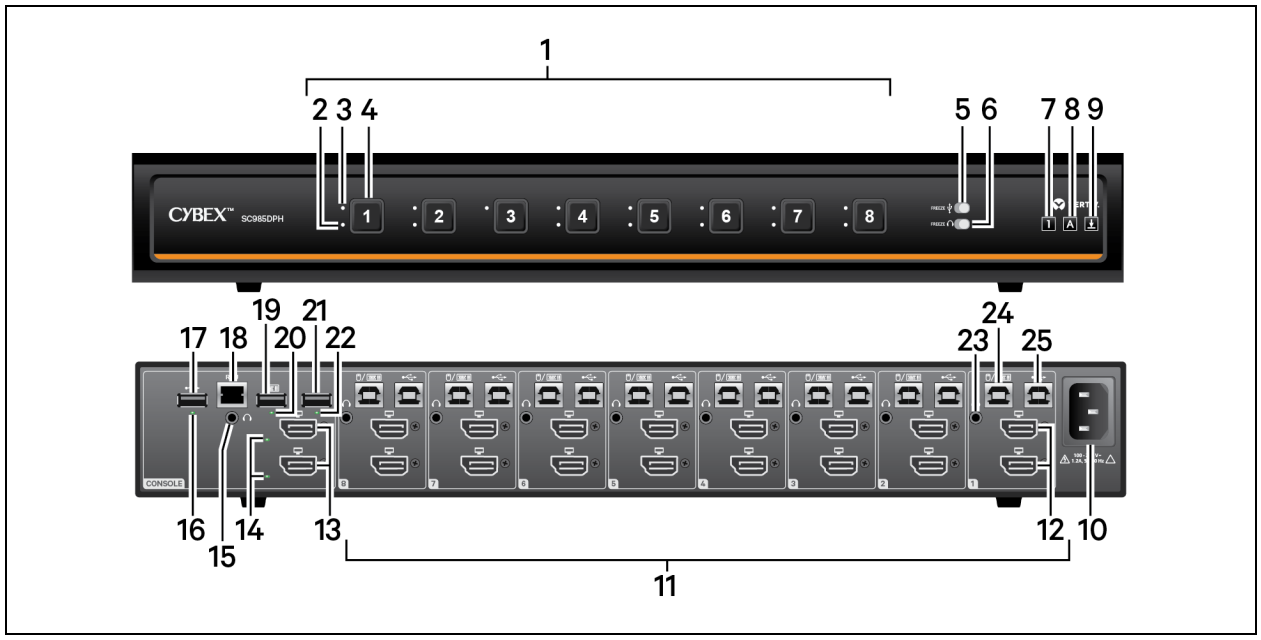


Table 2.5 SC985DPH Switch Descriptions

Item	Description	Item	Description
1	Computer channel 1-8 selectors	14	Console video diagnostic LED indicator
2	Audio lock indicator	15	Console speaker output
3	DPP lock indicator	16	Console USB status LED indicator
4	Channel selector	17	Console DPP USB Type-A input
5	DPP freeze toggle	18	RCU port; used with AFP
6	Audio freeze toggle	19	Console keyboard USB Type-A input
7	Num Lock indicator; illuminates when activated	20	Console keyboard status LED indicator
8	Caps Lock indicator; illuminates when activated	21	Console mouse USB Type-A input
9	Scroll Lock indicator; illuminates when activated	22	Console keyboard status LED indicator
10	Power input	23	Speaker connector for computer 1
11	Computer port connectors	24	Keyboard and mouse USB Type-B connector for computer 1
12	DP/HDMI video input for computer eight	25	DPP USB Type-B connector for computer 1
13	Console DP/HDMI video output		

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 1.

2.2.1 Rear panel status LED indicators

The keyboard and mouse ports only accept USB HID (human interface device) keyboard and mouse devices. By default, the DPP supports authentication devices, such as smart card and biometric readers. Other devices must be specifically whitelisted. Refer to the Vertiv™ Cybex™ SC Series Secure Switches Additional Operations and Configuration Technical Bulletin for more information.

NOTE: Any device connected to the DPP must have proper USB grounding to be authorized for use.

The keyboard, mouse and DPP diagnostic LEDs indicate an approved device is connected and ready for use. Each LED illuminates solid green a few seconds after power is applied.

- Off - no device detected
- Red - device is rejected
- Green - device is approved

The video diagnostic LED indicates the Extended Display Identification Data (EDID) information has been successfully read from the display and stored in memory. The EDID is only read in the first few seconds after the switch is powered on.

- Off - no EDID detected
- Blinking - reading EDID
- On - EDID received

NOTE: Hot-plugging or swapping displays while the switch is on is not supported. To change a display, power cycle the switch.

2.2.2 Important notes about keyboard shortcuts

- Always use the left Control (L-CTRL) key unless otherwise specified.
- Press keyboard shortcut keys sequentially.
- Do not use the numeric keypad for toggling shortcuts unless specified.
- All keyboard shortcuts refer to QWERTY keyboards. If a non-QWERTY keyboard is in use, keep using the QWERTY layout.

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 to switch between computers.

Alternatively, the switch can be configured to switch channels when the mouse moves across a display border while pressing the left Control (L-CTRL) key, 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.

NOTE: To use CNS with a multi-head Windows computer, you must download and install the multi-display driver from the Software Downloads section of the Vertiv website.

To enable CNS:

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 CNS:

Press L-CTRL | L-CTRL | F11 | b.

To disable video-follows-mouse:

Press L-CTRL | L-CTRL | f.

2.4 Channel Selection

You can select which computer to operate using the front panel push-buttons. The LED number illuminates to indicate which computer is currently selected. 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.

2.5 DPP Functionality

The switches allow secure connection to USB peripherals, including two-factor authentication devices such as CAC smart card readers, fingerprint readers and facial recognition. When an authorized USB device is connected to the switch, the DPP LED illuminates green and the device is ready for use. If the USB device is compatible but not authorized for use with the switch, the DPP status LED illuminates red and the device is inoperable until the device is authorized with the DPP configuration utility or through the terminal. If the USB device is not compatible with the switch or if no device is detected, the status DPP LED does not illuminate and the device is inoperable.

NOTE: Any device connected to the DPP must have proper USB grounding, fully compliant with a standard USB 1.1 or USB 2.0, and not require an external power source.

If a computer will not use the device connected to the DPP, do not connect a USB cable between the switch's DPP and the computer. The switch will automatically detect a cable and attempt to program the DPP selection logic.

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

The DPP may be locked to a specific computer to enable you to switch between ports without switching the DPP. When locked, switching channels does not affect processes performed by the USB device connected to the locked channel.

To lock the DPP to a specific computer:

1. Select the computer you want to lock DPP on.
2. On the front panel, enable the DPP freeze button and verify the DPP freeze indicator illuminates on the selected channel and on the freeze button.

After you lock DPP functionality, you can switch channels and the USB device on the locked DPP channel remains active.

See the Vertiv™ Cybex™ SC Series Secure Switches Additional Operations and Configuration Technical Bulletin for detailed DPP configuration procedures.

NOTE: If the switch with custom DPP configuration is restored to factory settings, the DPP feature will revert to authorizing only authentication devices after the restart.

2.6 Audio Functionality

The switches are compatible with stereo headphones and amplified speakers.

NOTE: Do not connect a microphone device to the switch's audio output port. Use headset devices that do not include microphone capabilities.

You can lock the analog audio to a specific channel. After you lock audio functionality, you can switch channels and the audio on the locked channel remains active.

To lock the analog audio to a specific computer:

1. Select the computer you want to lock DPP on.
2. On the front panel, enable the DPP freeze button and verify the DPP freeze indicator illuminates on the selected channel and on the freeze button.

2.7 Keyboard and Mouse Settings

2.7.1 Keyboard lock LED indicators

All secure switches block communication from the computers to the keyboard to prevent potential data leaks. You can enable Caps Lock, Scroll Lock or Num Lock from a connected keyboard; however, the connected keyboard status indicators do not illuminate to indicate the settings are enabled. The Caps Lock, Scroll Lock and Num Lock LEDs on the switch illuminate to indicate the settings are enabled on a specific channel. Switching channels changes the status of the LEDs, if different settings are enabled on each computer.

2.7.2 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 depressed, you can move objects only within the active display.

To freeze the mouse cursor on a selected channel:

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

To unfreeze the mouse cursor on a selected channel:

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

2.8 System Settings

2.8.1 Restore factory defaults

When the switch is restored to factory default settings, the front panel LEDs blink in unison to indicate a successful factory reset and restart the switch. After the switch restarts, channel 1 is selected.

Restoring factory default settings erases all user-defined configurations, including DPP custom configurations and user-defined presets.

To clear all settings and restore factory defaults:

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

2.8.2 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.

NOTE: Vertiv recommends using a Windows computer to access the terminal menu.

The default username is admin1234 and 1234ABCDefg!@# is the default password. Upon initial log-in, the administrator must set and confirm a new password. The new password must be eight to 15 characters long and contain at least one of each of the following:

- Uppercase letter
- Lowercase letter
- Number
- Special character: !@#$%^&*()-_

NOTE: Do not use the Caps Lock key when entering your password. Use the Shift key for uppercase letters.

You can change the password at any time. Restoring factory defaults does not reset the primary admin username and password. If you forget your username or password, contact Vertiv Technical Support for assistance.

WARNING! After three failed log-on attempts, the device admin console locks. You can power cycle the switch to try again.

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.

2.8.3 System configuration

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

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 and skip. Custom or application keys may not be supported.

To enable/disable touch screen support:

Enter L-CTRL | R-CTRL | s.

2.9 Interchangeable KVM to KM Functionality

In KVM mode (default), one display, keyboard, mouse, DPP and audio peripheral set is switched between all computers. In KM mode, each computer is connected to a separate display while only the keyboard, mouse, DPP and audio peripherals are switched.

2.9.1 KM mode

With KM mode, the displays are connected directly to the computers so you can view all computers simultaneously, such as in a video wall. A KM preset is selected that matches the physical positioning of each display to seamlessly switch computer by moving the mouse cursor to the desired display. When the mouse cursor is moved to the display of another computer, the keyboard, DPP and audio are switched. The following image details the predefined preset display configurations.

NOTE: In the configurations, gray indicates a single display 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 2.6 Two-Port KM Presets

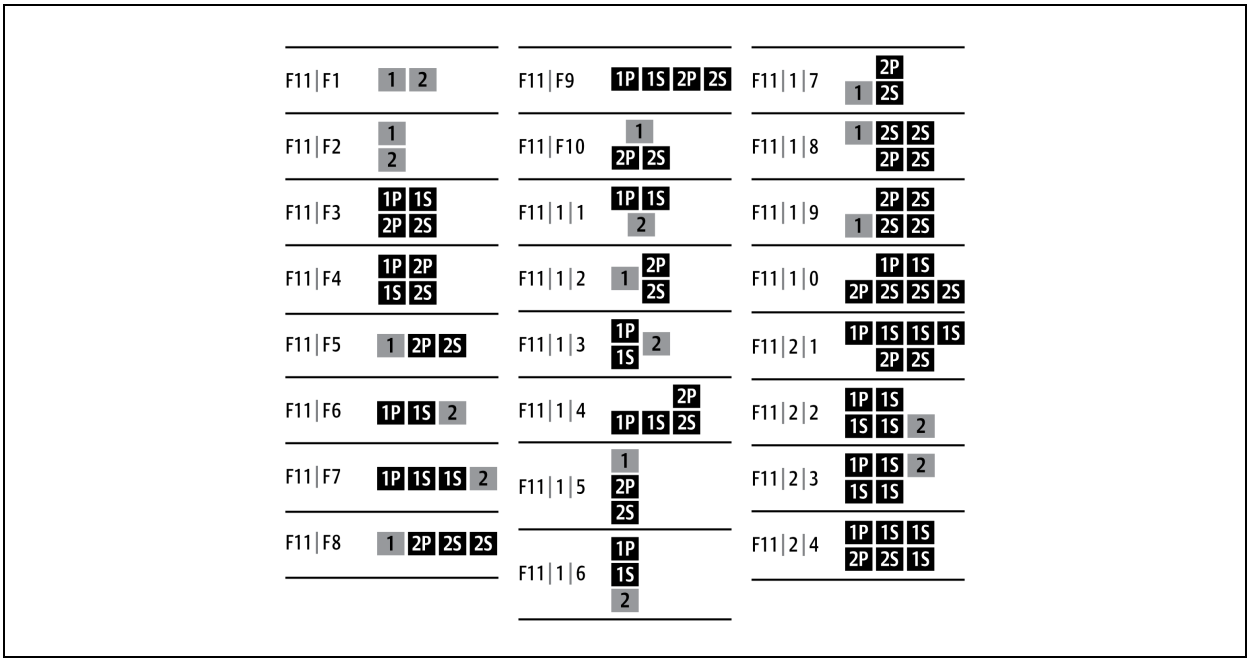
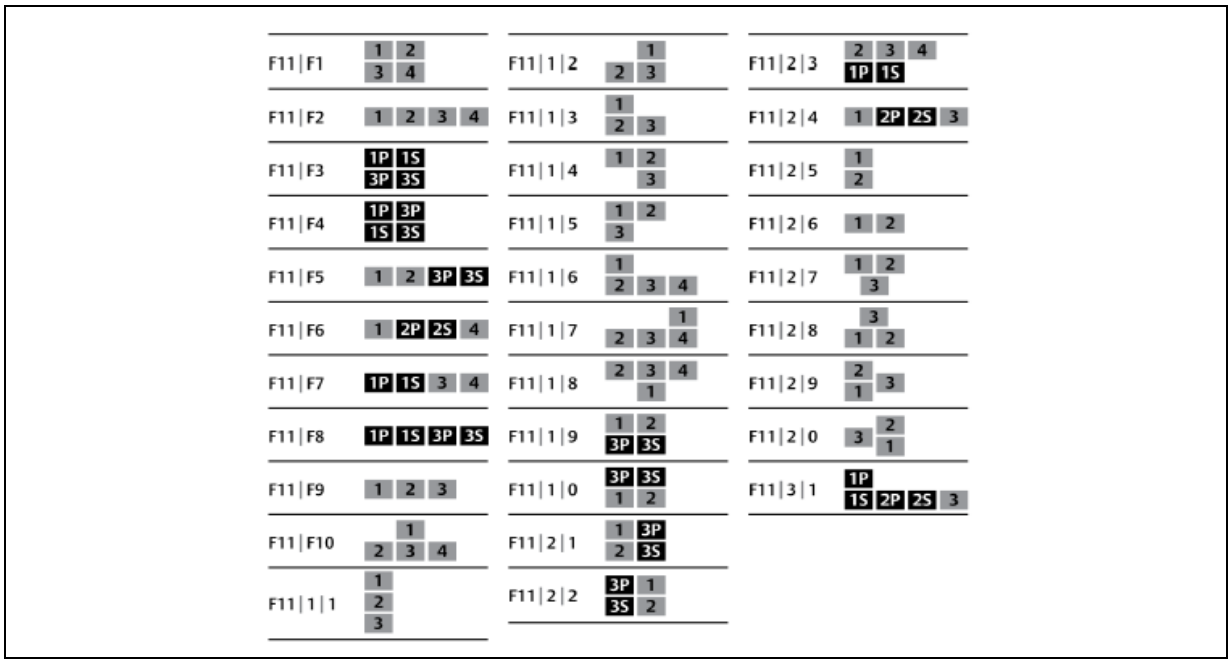


Figure 2.7 Four-Port KM Presets



NOTE: The Vertiv™ Cybex™ SC985DPH switch does not support KVM/KM presets.

Alternately, you can create and load a custom display layout using the KM Tool Utility that you can download from the product page at www.vertiv.com. To select the custom KM preset, use preset F11 | F12.

NOTE: This utility is currently only available for Microsoft Windows.

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, DPP and audio peripherals connected to the KVM.
3. Enable CNS by pressing L-CTRL | L-CTRL | F11 | c.
4. Select a preset by pressing L-CTRL | L-CTRL | <preset>.

NOTE: To use KM mode with a multi-head Windows computer, you must download and install the multi-display driver from the Software Downloads section of the Vertiv website.

2.9.2 KVM mode

In KVM mode (default), displays are connected to the switch and video is switched with keyboard, mouse, DPP and audio so that only one computer is visible at a time.

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. (Optional) Disable CNS by pressing L-CTRL | L-CTRL | F11 | b.

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Appendices

Appendix A: Keyboard Shortcuts

Table A.1 Keyboard Shortcuts

Description	Shortcut
Restore factory defaults	L-CTRL | L-CTRL | F11 | r
Disable CNS (default)	L-CTRL | L-CTRL | F11 | b
Enable CNS	L-CTRL | L-CTRL | F11 | c
Enable/disable video follows mouse	L-CTRL | L-CTRL | f
Freeze mouse cursor to current screen	L-CTRL | L-CTRL | F11 | f
Unfreeze mouse cursor 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 (requires accessing the terminal menu first)	L-CTRL | R-CTRL | b
Set current channel to absolute mouse only (requires accessing the terminal menu first)	L-CTRL | R-CTRL | c
Access the terminal menu	L-CTRL | R-CTRL | t
Enable/disable consumer/multimedia keyboard support (requires accessing the terminal menu first, disabled by default)	L-CTRL | R-CTRL | k
Enable/disable touch screen support (requires accessing the terminal menu first, disabled by default)	L-CTRL | R-CTRL | s
Select KM preset [x]	L-CTRL | L-CTRL | F11 | <x>
Enable the switch to load a custom preset (requires accessing the terminal menu first)	L-CTRL | R-CTRL | l (lowercase L)
Switch to custom preset	L-CTRL | L-CTRL | F11 | F12
Temporarily switch to relative mouse mode	L-CTRL + Shift [press and hold]
Enable/disable shortcut forwarding (disabled by default, used if cascading switches)	L-CTRL | R-CTRL | End

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Appendix B: Technical Specifications

B.1 SC800/900DPH Series and SCKM140PP4 Switches

Table B.1 Technical Specifications

Item	SC820DPH	SC840DPH	SC845DPH	SC920DPH	SC940DPH	SC945DPH	SC985DPH	SCKM140PP4
Computers								
Ports	2	4	4	2	4	4	8	4
DP/HDMI Univ Video	Single-Head	Single-Head	Single-Head	Dual-Head	Dual-Head	Dual-Head	Dual-Head	N/A
Max Resolution	UHD 4K (3840x2160) @ 60Hz							N/A
Keyboard and Mouse	1 x USB 2.0 Type-B							2 x USB 2.0 Type-B
DPP – USB 2.0 Type-B	N/A	N/A	Yes	N/A	N/A	Yes	Yes	N/A
Analog Audio	1 x 3.5 mm Speaker							None
Console								
DP/HDMI Univ Video	Single-Head	Single-Head	Single-Head	Dual-Head	Dual-Head	Dual-Head	Dual-Head	N/A
Keyboard and Mouse	2 x USB 2.0 Type-A							
DPP – USB 2.0 Type-A	N/A	N/A	Yes	N/A	N/A	Yes	Yes	N/A
Analog Audio	1 x 3.5 mm Speaker							None
Physical								
Dimensions (WxDxH)	7.0 x 2.4 x 1.7 in/ 178 x 61 x 43 mm	13.7 x 5.0 x 1.7 in / 348 x 127 x 43 mm		7.0 x 2.4 x 2.2 in/ 178 x 61 x 56 mm	13.7 x 5.0 x 2.2 in/ 348 x 127 x 56 mm		17.3 x 7.3 x 2.2 in/ 439 x 185 x 56 mm	13.7 x 5.0 x 1.7 in/ 348 x 127 x 43 mm
Weight	1.0lbs/ 0.5kg	3.0lbs/ 1.5kg		1.5lbs/ 0.7kg	3.7lbs/ 1.9kg		6.8lbs/ 3.1kg	3.0lbs/ 1.5 kg
Mounting Options	Desk Mount - DMK-09			Desk Mount - DMK-09			Rack Mount Included	Desk mount - DMK-09
Environmental Conditions								
Operating Temperature	0 to 40 °C/32 to 104 °F							
Storage Temperature	-20 to 60 °C/-4 to 140 °F							
Humidity	0 to 80 % RH, non-condensing							

Table B.1 Technical Specifications (continued)

Item	SC820DPH	SC840DPH	SC845DPH	SC920DPH	SC940DPH	SC945DPH	SC985DPH	SCKM140PP4
Electrical Power								
Power Supply Type	External						Internal	External
AC Input Voltage	100 – 240 V AC, 50/60Hz, Auto-sensing							
Power Supply Output	12V DC, 2.5A Max, LPS						45W max	12V, DC, 2.5A Max, LPS
Power Connector	Wall-mounted power supply with user-interchangeable localized plug blades						6 foot, IEC320 C13 to C14 cord (Includes user-interchangeable C14 to localized socket plugs)	Wall-mounted power supply with user-interchangeable localized plug blades
Regulatory								
Security Certification	Designed for Common Criteria Protection Profile for Peripheral Sharing Device v. 4.0 and Evaluation Assurance Level (EAL) 4+							
Regulatory Certifications	FCC class A, CE, TUV US, TUV Canada, RCM, VCCI							
Standard Product Warranty	3 Years; additional warranty terms available							
Design & Assembly	Huntsville, AL USA							

NOTE: A DVI-D computer or console display may be connected using an HDMI-to-DVI-D cable (see accessories table below).

Table B.2 KVM Computer Cables

Computer Video	Video Type	Length (ft/m)	Single-Head		Dual-Head	
			Audio/USB	Audio/USB/DPP	Audio/USB	Audio/USB/DPP
DP	DP-to-DP	6/1.8	CBL0102	CBL0104	CBL0106	CBL0108
		10/3.0	CBL0103	CBL0105	CBL0107	CBL0109
Mini DP	mDP-to-DP, TAA	10/3.0		CBL0194T		CBL0195T
HDMI	HDMI-to-HDMI	6/1.8	CBL0110 CBL0130	CBL0112	CBL0114	CBL0116
		10/3.0	CBL0111 CBL0131	CBL0113	CBL0115	CBL0117
DVI-D	HDMI-to-DVI-D	6/1.8	CBL0162	CBL0164	CBL0166	CBL0168
		10/3.0	CBL0163	CBL0165	CBL0167	CBL0169

Table B.3 KM Computer Cables

Length (ft/m)	Part Number
6/1.8	CBL0130
10/3.0	CBL0131

Table B.4 Console Video Only Cables (6ft/1.8m)

Display Video	Cable Type	Display Video
DP	DP-to-DP, TAA	CBL0188T
HDMI	HDMI-to-HDMI, TAA	CBL0189T
DVI-D	HDMI-to-DVI-D (DVI-D display to HDMI KVM), TAA	CBL0191T

Table B.5 Accessories

Part Number	Description	Usage
USBCKVMSHNP	10ft USB-C (PC) to Single Display DP (KVM) adapter cable +ETH +PWR	Connect USB-C single-head computer to DP/USB KVM port, provides Ethernet and USB-C PD power connections.
USBCKVMDHNP	10ft USB-C (PC) to Dual Display DP (KVM) adapter cable +ETH +PWR	Connect USB-C dual-head computer to DP/USB KVM port, provides Ethernet and USB-C PD power connections.
AFP0004	4-port Remote Active Front Panel	Remotely select computer ports on 2 and 4-port KVM switches or SCKM140PP4 switches.
AFP0008	8-port Remote Active Front Panel	Remotely select computer ports on SC985DPH switches.

B.2 SC800/900DVI Series Switches

Table B.6 Technical Specifications

Item	SC840DVI	SC940DVI
Computers		
Ports	4	4
Video Type	Single-Head, Dual-Link DVI-D (HDMI with HDMI-to-DVI-D cable)	Dual-Head, Dual-Link DVI-D (HDMI with HDMI-to-DVI-D cable)
Max Resolution	2560 x 1600 @ 60 Hz or 4K UHD 3840 x 2160 @ 30 Hz (using HDMI-to-DVI-D cable)	
Keyboard and Mouse	1 x USB 2.0 Type-B	
Analog Audio	1 x 3.5 mm Speaker	
Console		
Video Type	Single-Head, Dual-Link DVI-D (HDMI with HDMI-to-DVI-D cable)	Dual-Head, Dual-Link DVI-D (HDMI with HDMI-to-DVI-D cable)
Keyboard and Mouse	2 x USB 2.0 Type-A	
Analog Audio	1 x 3.5 mm Speaker	
Physical		
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
Weight	3.0lbs/1.5kg	3.7lbs /1.9kg
Mounting Option	Desk Mount - DMK-09	
Environmental Conditions		
Operating Temperature	0 to 40 °C/32 to 104 °F	
Storage Temperature	-20 to 60 °C/-4 to 140 °F	
Humidity	0 to 80 % RH, non-condensing	
Electrical Power		
Power Supply Type	External	
AC Input Voltage	100–240 V AC, 50/60 Hz, Auto-sensing	
Power Supply Output	12V DC, 2.5A Max, LPS	
Power Connector	Wall-mounted power supply with user-interchangeable localized plug blades	
Regulatory		
Security Certification	Designed for Common Criteria Protection Profile for Peripheral Sharing Device v. 4.0 and Evaluation Assurance Level (EAL) 4+	
Regulatory Certifications	FCC Class A, CE, TUV US, TUV Canada, RCM, VCCI	
Standard Product Warranty	3 Years; additional warranty terms available	
Design and Assembly	Huntsville, AL USA	

Table B.7 Computer Cables

Computer Video	Video Type	Length (ft /m)	Single-Head		Dual-Head	
DVI-D	DVI-D-to-DVI-D	6/1.8	CBL0150	CBL0146	CBL0152	CBL0148
		10/3.0	CBL0151	CBL0147	CBL0153	CBL0149
HDMI	DVI-D-to-HDMI	10/3.0		CBL0192		CBL0193

Table B.8 Console Video Only Cables (6ft/1.8m)

Display Video	Cable Type	Part Number
DVI-D	DVI-D-to-DVI-D, TAA	CBL0190T
HDMI	HDMI-to-DVI-D, TAA	CBL0191T

Table B.9 Accessories

Part Number	Description	Usage
AFP0004	4-port Remote Active Front Panel	Remotely select computer ports on 4-port KVM switch.

B.3 SC800/900DPHC Series Switches

Table B.10 Technical Specifications

Item	SC840DPHC	SC845DPHC	SC94DPHC	SC945DPHC
Computers				
Ports	4	4	4	4
Video Type	1 x USB-C 3 x Single-Head DP/HDMI Univ	1 x USB-C 3 x Single-Head DP/HDMI Univ	1 x USB-C; 3 x Dual-Head DP/HDMI Univ	1 x USB-C 3 x Dual-Head DP/HDMI Univ
Max Resolution	UHD 4K (3840x2160) @ 60Hz			
Keyboard and Mouse	1 - Included in USB-C; 3 - 1 x USB 2.0 Type-B			
DPP		1 x USB 2.0 Type-B (DPH ports 1, 2, and 3 only) (N/A on USB-C port)		1 x USB 2.0 Type-B (DPH ports 1, 2, and 3 only) (N/A on USB-C port)
Analog Audio	1 x 3.5 mm Speaker			
Console				
DP/HDMI Univ Video	Single-Head DP/HDMI Univ	Single-Head DP/HDMI Univ	Dual-Head DP/HDMI Univ	Dual-Head DP/HDMI Univ
Keyboard and Mouse	2 x USB 2.0 Type-A			
DPP		1 x USB 2.0 Type-A		1 x USB 2.0 Type-A
Analog Audio	1 x 3.5 mm Speaker			
Physical				
Dimensions (WxDxH)	7.0 x 2.4 x 1.7 in/178 x 61 x 43 mm		7.0 x 2.4 x 2.2 in/178 x 61 x 56 mm	
Weight	1.0lbs/0.5kg		1.5lbs/0.7kg	
Mounting Options	Desk Mount - DMK-09			
Environmental Conditions				
Operating Temperature	0 to 40 °C/32 to 104 °F			
Storage Temperature	-20 to 60 °C/-4 to 140 °F			
Humidity	0 to 80 % RH, non-condensing			
Electrical Power				
Power Supply Type	External			
AC Input Voltage	100–240 V AC, 50/60 Hz, Auto-sensing			
Power Supply Output	12V DC, 2.5A Max, LPS			
Power Connector	Wall-mounted power supply with user-interchangeable localized plug blades			

Table B.10 Technical Specifications (continued)

Item	SC840DPHC	SC845DPHC	SC94DPHC	SC945DPHC
Regulatory				
Security Certification	Designed for Common Criteria Protection Profile for Peripheral Sharing Device v. 4.0 and Evaluation Assurance Level (EAL) 4+			
Regulatory Certifications	FCC Class A, CE, TUV US, TUV Canada, RCM, VCCI			
Standard Product Warranty	3 Years; additional warranty terms available			
Design and Assembly	Huntsville, AL USA			
NOTE: A DVI-D computer or console display may be connected using an HDMI-to-DVI-D cable (see accessories table below).				

Table B.11 KVM Computer Cables

Computer Video	Video Type	Length (ft/m)	Single-Head		Dual-Head	
			Audio/USB	Audio/USB/DPP	Audio/USB	Audio/USB/DPP
DP	DP-to-DP	6/1.8	CBL0102	CBL0104	CBL0106	CBL0108
		10/3.0	CBL0103	CBL0105	CBL0107	CBL0109
Mini DP	mDP-to-DP, TAA	10/3.0		CBL0194T		CBL0195T
HDMI	HDMI-to-HDMI	6/1.8	CBL0110	CBL0112	CBL0114	CBL0116
		10/3.0	CBL0111	CBL0113	CBL0115	CBL0117
DVI-D	HDMI-to-DVI-D	6/1.8	CBL0162	CBL0164	CBL0166	CBL0168
		10/3.0	CBL0163	CBL0165	CBL0167	CBL0169

Table B.12 Console Video Only Cables (6ft/1.8m)

Display Video	Cable Type	Display Video
DP	DP-to-DP, TAA	CBL0188T
HDMI	HDMI-to-HDMI, TAA	CBL0189T
DVI-D	HDMI-to-DVI-D (DVI-D display to HDMI KVM), TAA	CBL0191T

Table B.13 Accessories

Part Number	Description	Usage
USBCKVMSHNP	10ft USB-C (PC) to Single Display DP (KVM) adapter cable +ETH +PWR	Connect USB-C single-head computer to DP/USB KVM port, provides Ethernet and USB-C PD power connections.
USBCKVMDHNP	10ft USB-C (PC) to Dual Display DP (KVM) adapter cable +ETH +PWR	Connect USB-C dual-head computer to DP/USB KVM port, provides Ethernet and USB-C PD power connections.
USBCUSBCNP	10ft USB-C (PC) to USB-C (KVM) adapter cable +ETH +PWR	Connect USB-C computer to DPHC USB-C port, provides Ethernet and USB-C PD power connections.
AFP0004	4-port Remote Active Front Panel	Remotely select computer ports on 4-port KVM switch.

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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.
The switch enclosure is compromised.	The tamper-evident seals indicate intrusion, the switch is inoperable and all channel LED buttons flash continuously.	Immediately remove the switch from service and contact Technical Support.
Remote desktop control is connected and rendering the channel select buttons is inoperable.	The switch does not respond when the channel select buttons are pressed.	Disconnect from remote desktop control, or control the KVM through remote desktop control or keyboard shortcuts.

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.	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. **NOTE: If the computer is returning from standby mode, allow up to one minute for the computer to regain keyboard functionality.**
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.
Caps Lock, Scroll Lock and Num Lock LEDs do not illuminate on the keyboard.	When the Caps Lock, Scroll Lock or Num Lock keys are pressed, the corresponding keyboard LEDs do not illuminate.	This is a normal behavior. All secure switches block communication from the computers to the keyboard to prevent potential data leaks. To determine if Caps Lock, Scroll Lock or Num Lock are enabled on a specific computer, press the channel select button on the switch and observe the Caps Lock, Scroll Lock and Num Lock LEDs on the switch.
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.

C.5 DPP

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

Table C.5 Device Faults

Fault	Indicator	Resolution
The connected USB device is not qualified.	DPP LED flashes green and the USB device is inoperable.	Disconnect the non-qualified USB device and connect a qualified USB device.
The USB device is not working properly or the connecting cable between the computer and the DPP input port on the switch is damaged or missing.	DPP USB device is not working on a channel.	Ensure the USB device is working properly when connected directly to the computer and ensure that the USB cable connecting the computer and the DPP input port on the switch is not damaged or missing.
The USB device and video cables are connected to two different computers.	DPP USB device is not working on two channels.	Ensure the USB device and video cables are connected to the correct ports on the switch. For example, the USB device cable and the video cable for computer 1 should be connected to ports specifically designated for computer 1.
The USB device is not working properly or not connected to the computer.	DPP USB device is not working on all channels.	Ensure the USB device is working properly and connected directly to the computer. Ensure there is a USB connected cable between the computer and the relevant DPP.

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