ServSwitch DT DisplayPort KVM with USB and Audio

Combines DisplayPort with USB peripheral sharing in one unit.

2- and 4-port models are available.

FEDERAL COMMUNICATIONS COMMISSION AND
INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Normas Oficiales Mexicanas (NOM)
Electrical Safety Statement
INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

 A: El cable de poder o el contacto ha sido dañado; u

 B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

 C: El aparato ha sido expuesto a la lluvia; o

 D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

 E: El aparato ha sido tirado o su cubierta ha sido dañada.

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Windows is a registered trademark of Microsoft Corporation.

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Table of Contents

1. Specifications

Automatic Scan Interval: 3, 8, 15, and 30 seconds

Cable Length (Maximum): 10 ft. (3 m) for USB

DDC2B Support: Yes

Hotkeys: Yes

On-Screen Display (OSD): No

Operation: Hot plug-and-play

Resolution (Maximum): UXGA (1600 x 1200), WUXGA: (1920 x 1200), Full HD (1920 x 1080p), WQXGA (2560 x 1600)

User Controls: KV9702A: (1) front-panel push button; KV9704A: (4) front-panel push buttons

Connectors: KV9702A: Console interface: (4) USB Type A ports, (1) USB keyboard, (1) USB mouse, (1) DisplayPort monitor, (1) set of audio jacks for speaker and microphone;
Computer interface: (2) USB Type B ports, (2) DisplayPorts for monitor, (2) sets of audio jacks for speaker and microphone;
KV9704A: Console interface: (4) USB Type A ports, (1) USB keyboard, (1) USB mouse, (1) DisplayPort monitor, (1) set of audio jacks for speaker and microphone;
Computer interface: (4) USB Type B ports, (4) DisplayPorts for monitors, (4) sets of audio jacks for speaker and microphone

Indicators: KV9702A: (4) LEDs: (2) Computer Online, (2) Computer Selected; KV9704A: (8) LEDs: (4) Computer Online, (4) Computer Selected

Power: 9–12 V

Size: KV9702A: 1.6"H x 6.3"W x 3.9"D (4 x 16 x 10 cm); KV9704A: 1.7"H x 8.7"W x 5.1"D (4.4 x 22 x 13 cm)

Weight: KV9702A: 1.3 lb. (0.6 kg); KV9704A: 1.6 lb. (0.7 kg)

2. Overview

2.1 Introduction

The ServSwitch DT DisplayPort KVM with USB and Audio combines USB KVM, keyboard/video/mouse switching and USB peripheral sharing in one device. Two models are available: 2-port (KV9702A) and 4-port (KV9704A). You can easily operate up to four PCs, G3/G4 Macintosh® computers, or Mac® Pros from a single USB keyboard, USB mouse, and monitor, saving you space, time, equipment, and money. Its peripheral sharing function enables you to share more USB peripherals among all computers. The units also support bidirectional audio. Users can switch among up to two or four KVM sources and control the systems using a USB keyboard and mouse, USB peripherals, and bidirectional audio, and view them with a DisplayPort supported monitor.

Installation is as easy as connecting USB A-B cables between computers and the ServSwitch DT DisplayPort KVM. To select a port, just press the front-panel button(s). The built-in USB hub ensures smooth switching from one computer to the other. It reduces redundant cables and encourages a neat and tidy working environment.

2.2 Features

• Supports USB keyboards and mice.

• Supports high-resolution video up to UXGA (1600 x 1200)/Full HD (1920 x 1080)/WUXGA (1920 x 1200), WQXGA (2560 x 1600).

• 2–4 computers can share up to four different USB peripherals (KB + MS + USB devices).

• A unique multilayered switching system enables the USB (or audio) devices to operate independently.

• Front-panel push buttons and hotkeys make computer selection easy.

• Supports keyboard and mouse plug-n-play.

• Buzzer sound confirms computer switching.

• Front-panel buttons activate autoscan (KV9704A only).

• Scan time interval is selectable.

• Supports the DisplayPort monitor.

• No software is required.

• Supports Windows® and Mac host systems.

• Compatible with most of the popular screen resolutions, such as XGA, SXGA, UXGA, WSXGA, up to Full HD, WUXGA, WQXGA.

2.3 What's Included

• (1) 2- or 4-port KVM switch

• (1) external power supply with U.S. power cord

• This user's manual

• (4) rubber feet

2.4 Hardware Description

2.4.1 KV9702A Front and Back Panels

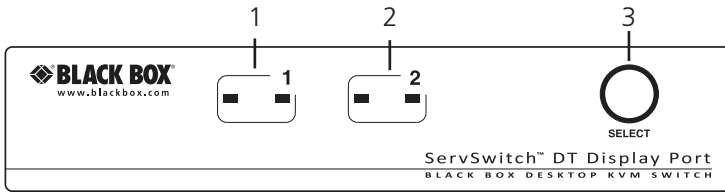Figures 2-1 and 2-2 illustrate the front and back panels of the KV9702A. Table 2-1 describes its components.

Figure 2-1. KV9702A front panel.

Figure 2-2. KV9702A back panel.

Table 2-1. KV9702A front and back panel components.

Number	Component	Description
1	(2) LEDs	(1) computer on-line, (1) computer selected for Port 1
2	(2) LEDs	(1) computer on-line, (1) computer selected for Port 2
3	Push button	Toggles between Computer 1 and Computer 2
4	Barrel connector	Links to 9–12-VDC power
5	Audio connector	Links to console headphones/speakers
6	Audio connector	Links to console microphone
7	USB Type A connector	Links to keyboard
8	USB Type A connector	Links to mouse
9	(2) USB Type A connectors	Links to USB peripherals
10	USB Type B connector	Links to CPU 2
11	Audio connector	Links to CPU 2 audio out
12	Audio connector	Links to CPU 2 microphone out
13	USB Type B connector	Links to CPU 1
14	Audio connector	Links to CPU 1 audio out
15	Audio connector	Links to CPU 1 microphone out
16	DisplayPort	LInks to console monitor
17	DisplayPort	Links to CPU 2 video card
18	DisplayPort	Links to CPU 1 video card

2.4.2 KV9704A Front and Back Panels

Figures 2-3 and 2-4 illustrate the front and back panels of the KV9704A. Table 2-2 describes its components.

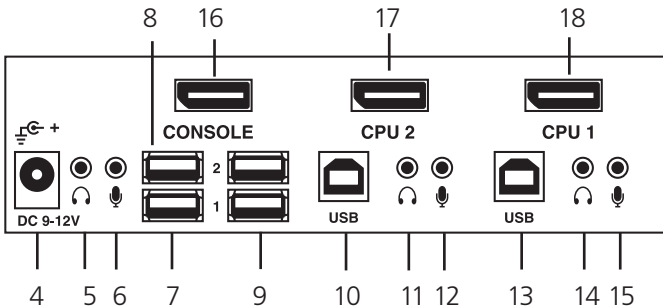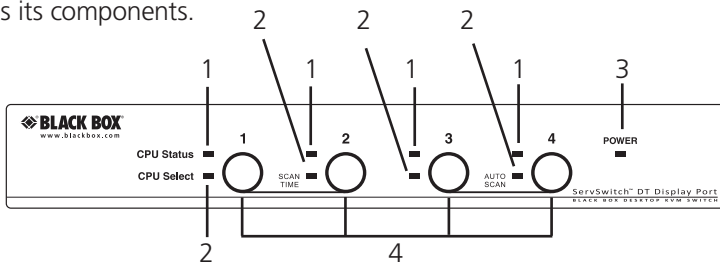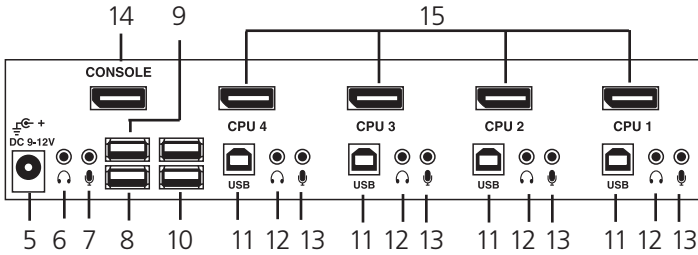Figure 2-3. KV9704A front panel.

Figure 2-4. KV9704A back panel.

Table 2-2. KV9704A front and back panel components.

Number	Component	Description
1	(4) LEDs	Indicates which CPU is selected
2	(4) LEDs	Lights when CPU is selected
3	(1) LED	Lights when power to the unit is on
4	(4) push buttons	Press to select computer 1, 2, 3, or 4
5	Barrel connector for power	LInks to 9–12 VDC power
6	Audio connector	Links to console headphones/speakers
7	Audio connector	Links to console microphone
8	USB Type A connector	Links to keyboard
9	USB Type A connector	Links to mouse
10	(2) USB Type A connectors	Links to USB peripherals
11	(4) USB Type B connectors	Links to CPU 1, CPU 2, CPU 3, CPU 4 USB ports
12	(4) Audio connectors	Links to CPU 1, CPU 2, CPU 3, CPU 4 audio out
13	(4) Audio connectors	Links to CPU 1, CPU 2, CPU 3, CPU 4 microphones out
14	(1) DisplayPort connector	Links to console monitor
15	(4) DisplayPort connectors	Links to CPU 1, CPU 2, CPU 3, CPU 4 video card

2.5 System Requirements

2.5.1 Console Side

• (1) DisplayPort monitor

• (1) USB keyboard

• (1) USB mouse

• (1) microphone and speaker (optional)

2.5.2 Computer Side

• (1) USB-enabled computer with DisplayPort video support

2.5.3 Cables

Each computer can interface with the KVM switch with:

• (1) DisplayPort video cable (EVNDP01-00xx-MM)

• (1) USB Type A-B cable (USB05-00xx)

• (1) Optional audio cable (EJ110-00xx)

3. Installation

Before installation, power off all devices that will be connected to this system.

• Make sure that all devices you will connect are properly grounded.

• Place cables away from fluorescent lights, air conditioners, and machines that are likely to generate electrical noise.

• Make sure that the DisplayPort video drivers are installed correctly on all computers.

3.1 PC BIOS Notice

The following BIOS setup changes are necessary for PC users and not necessary for Mac users:

• In standard CMOS, set "Halt on Error" to "All but keyboard."

• In PNP and PCI setup, set "PNP OS installed" to "YES" and set "USB IRQ" to "Enabled."

NOTE: The ServSwitch DT DisplayPort KVM switches USB keyboard and USB mouse from one computer to the other. If you plan to share other peripherals such as a camera, printer, external storage device, or scanner, shut down a computer's driver before switching to another computer. Port switching is equivalent to unplugging the USB cable from one computer and plugging it to another. Some USB drivers check attached USB peripherals constantly and do not support plug-n-play functionality.

3.2 Console Connection

1. Plug a DisplayPort monitor into the console's video port; plug a USB keyboard and a USB mouse into the corresponding USB ports on the console.

2. To use the standard audio feature, plug a set of audio jacks from the speaker and microphone to the console's speaker port and microphone port respectively,

3. Plug USB peripherals into the USB 1 and/or USB 2 ports on the console side if needed.

DisplayPort monitor, USB keyboard/mouse, audio speaker, and microphone

KV9704A

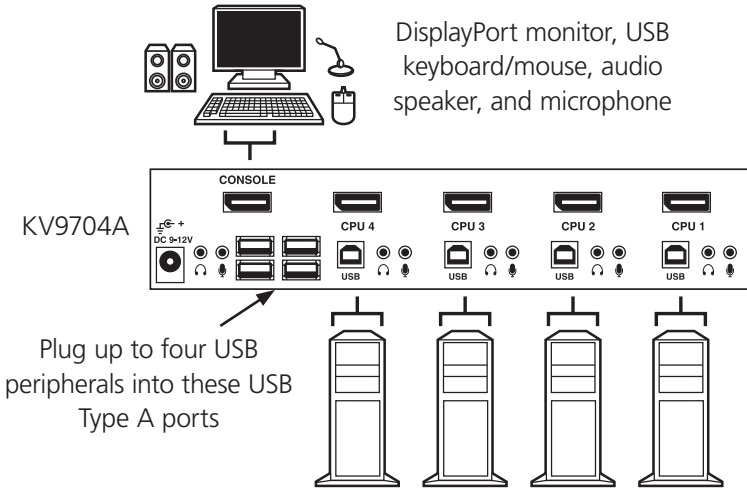Plug up to four USB peripherals into these USB Type A ports

Figure 3-1. Connecting the console.

3.3 Computer Connection

1. Use a DisplayPort male-to-male video cable to connect computer video to the KVM switch.

2. Use a USB A–B cable to connect the unit's USB port (B connector, square connector) and the USB port on the corresponding computer (A connector, flat connector).

3. Use a set of audio cables to connect the speaker port and the microphone port between the computer side of the unit and the corresponding computer. (Audio connection is optional.)

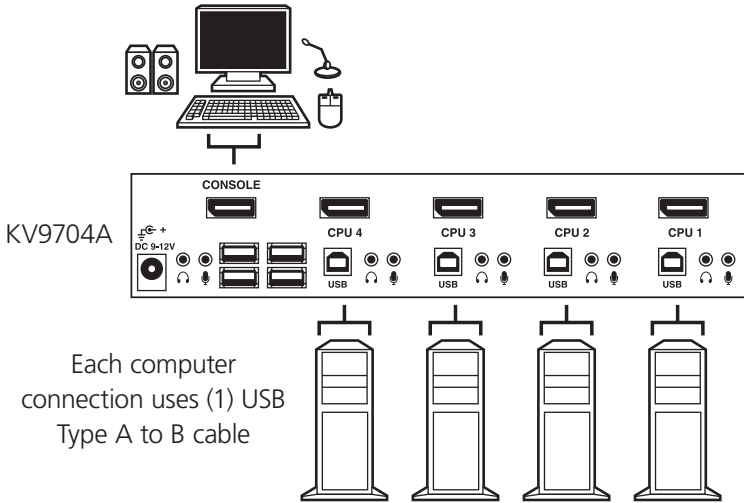4. Plug the power adapter from an appropriate DC power source to the switch power port.

Figure 3-2. Connecting the computer.

4. Operation

4.1 Front Panel

4.1.1 LED Indicators

The LED turns green when the connected computer is powered on. Its corresponding LED lights red when a connected computer is currently selected.

4.1.2 Push Buttons

For the KV9702A, press the "SELECT" button to switch PC port between the two connected computers, and wait for 2–3 seconds after each PC port switching, then you can press the button for switching PC port again.

For the KV9704A, each button on the front panel is associated with a connected computer for selection. Press one of the buttons to select the connected computer, and wait for 2–3 seconds after each port switching, then you can press another button for switching PC port again.

4.1.3 Auto Scan

For the KV9704A model only, the system automatically scans through the active computers in sequence with a fixed interval (see Scan Time in Section 4.1.4).

To activate Auto Scan, press front-panel push buttons "3" and "4""simultaneously. The port LED flashes during Auto Scan. Auto Scan is effective for active computers only. To exit the Auto Scan mode, just tap any one of the push buttons.

4.1.4 Scan Time

Set the scan time duration to 3, 8, 15, or 30 seconds.

For the KV9704A model only, to change the Scan Time, press both front-panel buttons "1" and "2" simultaneously. The unit responds with beep(s) 1, 2, 3, or 4 times for Scan Time of 3, 8, 15 or 30 seconds respectively.

NOTE: Scan Time is set to 3 seconds by default after blackout or reboot.

4.2 Hotkey Commands

A Hotkey command is a short keyboard sequence used to select a computer, activate a computer scan, etc. The KVM switch interprets keystrokes for hotkeys all the time. A hotkey sequence starts with two left Ctrl keystrokes (successively in 0.9 seconds) followed by one or two more keystrokes. A built-in buzzer generates a high-pitched beep for a correct hotkey command; otherwise, one low-pitched beep is generated for error, and the bad key sequence will not be forwarded to the selected computer.

NOTE: Press and hold the Left Shift key and press the Num Lock key twice, then release the Shift key followed by pressing the left Ctrl key once to enable/ disable the hotkey function.

To select a computer:

(Example: Selects the computer at Port 1.)

L-Ctrl + L-Ctrl + 1

(Example: Selects the computer at Port 2.)

L-Ctrl + L-Ctrl + 2

NOTE: Do not use the keypad at the right of the keyboard.

To start Auto Scan:

L-Ctrl + L-Ctrl + F1

To abort the Auto Scan mode, press the left Ctrl key twice. When Auto Scan detects any keyboard or mouse activity, it suspends the scanning until the activity stops; it then resumes with the next computer in sequence. The length of the Auto Scan interval (Scan Rate) is adjustable, see below.

Manual Scan enables users to manually switch back and forth between active computers.

L-Ctrl + L-Ctrl + F2

To select the previous or the next computer, press the up-arrow key or down-arrow key in sequence.

To abort the Manual Scan, press any other key.

To adjust Scan Rate, set the scan time before switching to the next computer:

L-Ctrl + L-Ctrl + F3

The KVM Switch generates 1 to 4 beeps indicating scan times of 3, 8, 15, and 30 seconds respectively.

Audio Stick

There are two options for Audio Stick: ON and OFF. When set to "ON," audio selection follows computer selection. When set to "OFF," audio selection stops following computer selection. Use this to listen to a particular computer's audio signal while operating other computers.

L-Ctrl + L-Ctrl + F5

The KVM switch beeps once or twice corresponding to ON or OFF respectively.

Force the audio signal to follow with the selected computer by pressing the following hotkey:

L-Ctrl + L-Ctrl + A

USB-Port Rule

There are two options for setting the rule of USB 1 and USB 2 on the Console side:

When set to "ON," USB-Port selection follows computer selection.

When set to "OFF," USB-Port selection stops following computer selection.

USB port setting for 2-Port model (KV9702A):

Press the hotkey below to turn ON/OFF both the USB 1 and USB 2 port Rule

L-Ctrl + L-Ctrl + F7

USB port setting for 4-Port model KV9704A:

USB 1: Pressing the hotkey below will turn ON/OFF the USB-Port Rule

L-Ctrl + L-Ctrl + F7

USB 2: Pressing the hotkey below will turn ON/OFF the USB-Port Rule

L-Ctrl + L-Ctrl + F8

Force the USB signal to follow the selected computer by pressing the following hotkey (applicable for both 2-Port [KV9702A] and 4-Port [KV9704A]):

L-Ctrl + L-Ctrl + U

NOTE: Make sure that the USB device is unlinked (safely removed) before switching to the next computer.

Alternative Hotkey Commands

In addition to the Left-Ctrl + Left-Ctrl hotkeys, there are two alternative hotkey sequences available.

1. For the following operations, users may press Scroll-Lock twice instead of pressing Left-Ctrl twice.

To select a computer:

Scroll-Lock + Scroll-Lock + 1

(Example: Select the computer at port 1.)

Scroll-Lock + Scroll-Lock + 2

(Example: Select the computer at Port 2.)

NOTE: Do not use the keypad at the right of the keyboard.

2. For those keyboards that do not have or do not support Scroll Lock, press and HOLD the Left-Shift and press Num-Lock twice instead of pressing Left-Ctrl twice.

To select a computer:

Hold Left-Shift + Press Num-Lock + Press Num-Lock then release shift + Press 1

(Example: Select the computer at Port 1.)

Hold Left-Shift + Press Num-Lock + Press Num-Lock then release shift + Press 2

(Example: Select the computer at Port 2.)

NOTE: Do not use the keypad at the right of the keyboard.

Appendix. Troubleshooting

Make sure that all cables are well-seated and labeled associated with each computer to avoid confusion when connected to the unit.

The unit has built-in power protection that works automatically when needed. When it works, USB communication halts and the only way to restart the unit properly is to remove all power sources (USB cables and power adapter), wait a few seconds, then apply power sources, and start again.

A.1 Problems/Causes/Solutions

Symptom: Keyboard or mouse does not work.

Causes:

• In Auto Scan, keyboard and mouse are not operable.

• Too many keyboards or mouse drivers are installed.

Solutions:

• Press any front-panel button to select a computer, then use the keyboard and mouse.

• Remove all unnecessary keyboards and mouse drivers.

Symptom: Newly-installed USB device does not work.

Causes:

• Improper device driver.

• Device consumes too much power.

• Device consumes too much power instantaneously.

• Improper device initialization.

• When the unit works under self-power (that is, no power supply is added), it supports a maximum of 100 mA as per USB specifications.

Solutions:

• Re-install the device driver.

• The device should be self-powered. Add a power adapter to the device.

• If the device does not have a power jack, add a power adapter with 9–12 VDC and less that 1-A current rating to the unit.

• Make sure the USB cable is well-seated for good communications.

• Remove all power sources to the unit by unplugging all USB A–B cables and the power adapter; then start all over again.

• Select the computer by push button, restart the computer, and try again.

Symptom: Computer hangs up while switching computer.

Causes: Device initialization or enumeration takes too much time.

Solutions:

• Wait at least five seconds before computer switching to ensure proper USB communication.

• Turn off the device driver (not the keyboard or the mouse) before computer switching.

Symptom: Auto Scan does not switch PC automatically, and the unit beeps.

Causes: All PCs are off or only one PC is turned on. Scan mode works for powered-on computers only.

Solution: Turn on computers.

Symptom: No video signal when users plug and unplug the DisplayPort connector or switch from port to port.

Cause: Some DisplayPort video cards do not respond to the signal switch simultaneously.

Solutions:

• Make sure that you have plugged a monitor to the console's DisplayPort port before plugging/unplugging the PC's video connector(s).

• Wait for a few seconds.

Symptom: When switching between computer ports, the DisplayPort monitor displays "No Signal."

Cause: Computer has gone into sleep mode or was not booted up while the console was selected on that specific computer.

Solution: If the DisplayPort video drivers are not installed, or are installed incorrectly, the computer cannot be brought out of sleep mode by using the keyboard and mouse. Also, when booting up a computer, the respective port needs to be selected until the OS has fully booted up. DisplayPort technology requires knowing exactly what is connected when it initializes its video signal.

A.2 Contacting Black Box

If you determine that your ServSwitch DT DisplayPort KVM with USB and Audio is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

• the nature and duration of the problem.

• when the problem occurs.

• the components involved in the problem.

• any particular application that, when used, appears to create the problem or make it worse.

A.3 Shipping and Packaging

If you need to transport or ship your ServSwitch DT DisplayPort KVM with USB and Audio:

• Package it carefully. We recommend that you use the original container.

• If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.

About Black Box

Black Box Network Services is your source for an extensive range of networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech support available in 30 seconds or less.

KV9702A, rev. 2