KV4402A, KV4404A

# DISPLAYPORT™ QUAD-HEAD KVM SWITCH

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# QUICK START GUIDE

## HARDWARE INSTALLATION

1. Ensure that power is disconnected from the DisplayPort™ Quad-Head KVM Switch.
2. Connect the DisplayPort cables and USB cables (male-A to male-B) from the computers to the respective ports on the KVM Switch.
3. Optionally connect audio cables from the computers to the respective ports on the KVM Switch.
4. Optionally connect RS-232 for control functions.
5. Connect the USB keyboard and mouse to the two USB ports with keyboard and mouse symbols, respectively.
6. Optionally connect speakers to the KVM Switch.
7. Optionally connect up to two USB peripheral devices, such as printers or flash drives.
8. Connect the display monitors to the OUTPUT connectors on the KVM Switch.
9. Power on the KVM Switch.

## FRONT-PANEL CONTROL

To switch ports using the front panel, press the Activity buttons to navigate between connected computers.

## COMMANDS

This table contains commands that can be used on both the KV4402A and KV4404A. Additional commands are available for the KV4404A.

**TABLE QS-1. COMMANDS**

| COMMANDS | HOTKEYS | RS-232 CONTROL |
|---|---|---|
| Switch all devices (KVM, USB 2.0, and Audio) | [CTRL] [CTRL] [port #] [ENTER] *Please note there is no "m" for this command | //m [port #] [ENTER] |
| Switch KVM only | [CTRL] [CTRL] c [port #] [ENTER] | //c [port #] [ENTER] |
| Switch Audio only | [CTRL] [CTRL] a [port #] [ENTER] | //a [port #] [ENTER] |
| Switch USB 2.0 only | [CTRL] [CTRL] u [port #] [ENTER] | //u [port #] [ENTER] |
| EDID Learning | [CTRL] [CTRL] e [ENTER] | //e [ENTER] |
| Trigger Hotplug | [CTRL] [CTRL] h [ENTER] | //h [ENTER] |
| Next port | [CTRL] [CTRL] [up-arrow] | N/A |
| Previous port | [CTRL] [CTRL] [down-arrow] | N/A |
| Reset | [CTRL] [CTRL] r | //r |
| Factory Default Reset | [CTRL] [CTRL] f | //f |
| Get Port Status | N/A | //?? [ENTER] |

# CHAPTER 1: SPECIFICATIONS

## TABLE 1-1. SPECIFICATIONS

| Video | |
|---|---|
| Link Rate | 5.4 Gbps/lane |
| Input Interface | KV4402A: (8) DisplayPort1.2a female |
| | KV4404A: (16) DisplayPort1.2a female |
| Output Interface | (4) DisplayPort™ 1.2a female |
| Resolution | Ultra-HD 4K (3840 x 2160) @ 60 Hz with high-quality DisplayPort cables or |
| | Ultra-HD 4K (3840 x 2160) @ 30 Hz with low-quality DisplayPort cables |
| Input Equalization | Automatic |
| Video Bandwidth | 300 MHz, 10.2 Gbps |
| HDCP Compliant | Yes |
| Input/Output Max. Cable Length | 20 ft. (6.2 m) (depending on cable quality) |
| **Audio** | |
| Input Interface | KV4402A: (2) 3.5-mm stereo audio jack |
| | KV4404A: (4) 3.5-mm stereo audio jack |
| Output Interface | (1) 3.5-mm stereo audio jack |
| Frequency Response | 20 Hz to 20 KHz |
| Common Mode | Rejection @ 60 dB |
| Nominal Level | 0.0 to 1.0 V |
| **Control** | |
| Front Panel | KV4402A: (2) Computer LEDs, (1) Activity button |
| | KV4404A: (4) Computer LEDs, (2) Activity buttons |
| RS-232 | KV4402A: 3.5mm jack (TRS), 115200 bps, N, 8 1, No flow control |
| | KV4404A: DB9 female, 115200 bps, N, 8 1, No flow control |
| Hotkeys | Via keyboard |
| Emulation | Keyboard, Video, and Mouse |
| **USB** | |
| Signal Type | USB 2.0, 1.1, and 1.0 w/ internal hub |
| Input Interface | KV4402A: USB Type B (female) |
| | KV4404A: (4) USB Type B (female) |
| Device Input Interface | (2) USB 1.1 Type A (female) for keyboard-mouse; (2) USB 2.0 Type A Transparent |
| **Other** | |
| Operating Temperature | 23 to 95° F (-5 to +35° C) |
| Storage Temperature | -4 to +185° F (-20 to +85° C) |
| Operating Humidity | 5 to 90% RH, non-condensing |
| Power | External 100-240 VAC/12VDC, 3A |
| Dimensions (H X W X D) | KV4402A: 4" x 4.3" x 6.4"  (10.1 x 11 x 16.3 cm) |
| | KV4404A: 4.5" x 6.7" x 12.8"  (11.4 x 16.9 x 32.6 cm) |
| Weight (product only) | KV4402A: 2.2 lb. (1kg) |
| | KV4404A: 5.5 lb. (2.5 kg) |
| Approvals | UL, CE, ROHS Compliant |

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## 2.1 INTRODUCTION

KV4402A is a dedicated multi-platform KVM switch capable of managing up to two different computers through four DisplayPort™ monitors, one USB keyboard and mouse, a single set of speakers, and a USB 2.0 Device.
The USB emulation technology utilized by the device enables immediate hotkey source switching through a remote USB keyboard and mouse. It delivers high resolutions of up to 4K (3840x2160 @ 60Hz) with zero pixel loss from TMDS signal correction.

- Source switching made easy: KV4402A provides a simplified management approach to up two computers with DisplayPort, stereo audio, and USB 2.0 outputs. This dynamic KVM console can be controlled remotely from easily accessible keyboard hotkeys or RS-232 commands, as well as directly through the console's easy-to-read front panel.

- EDID learning and programming: Detection of DDC signals for all attached devices is effortless with the KV4402A due to its real EDID learning and programming. This is vital in optimizing the resolution of the selected graphics card to properly display on the remote monitor.

- Full USB keyboard and mouse emulation: The USB keyboard and mouse emulation utilized by the KV4402A provides accurate and quick source switching by means of keyboard hotkeys and mouse actions. It imitates the presence of a keyboard and mouse for every attached computer through a USB cable. This is essential as it simulates the existence of the keyboard and mouse to all the computers while switching without interruptions.

## 2.2 FEATURES

- Supports up to 4K (3840 x 2160) @ 60 Hz with high-quality DisplayPort cables or up to 4K (3840 x 2160) @ 30 Hz with low-quality DisplayPort cables
- Supports 3D
- Supports LPCM, Dolby-AC3, DTS7.1, and DSD/Dolby TrueHD/DTS-HD master audio
- Supports DisplayPort1.2a
- Control up to two quad-head computers with a single KVM
- Zero pixel loss with TMDS signal correction
- Supports USB keyboard-mouse emulation
- Supports all USB 2.0 devices
- Uses hotkey commands for quick channel selection
- Independent (asynchronous) switching of KVM and peripheral USB ports, enabling functions such as scanning a document and saving it on a different computer.
- Complete KVM emulation for error-free booting
- Easy switching via front-panel, RS-232, or hotkeys
- Full DisplayPort support with backward compatibility

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## 2.3 WHAT'S INCLUDED

Before you install this switch, verify that your package contains the following items:

- (1) DisplayPort™ Quad-Head KVM Switch - 2-Port
- (1) 12VDC, 3A power adapter
- Power cord
- If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

## 2.4 HARDWARE DESCRIPTION

### 2.4.1 FRONT PANEL

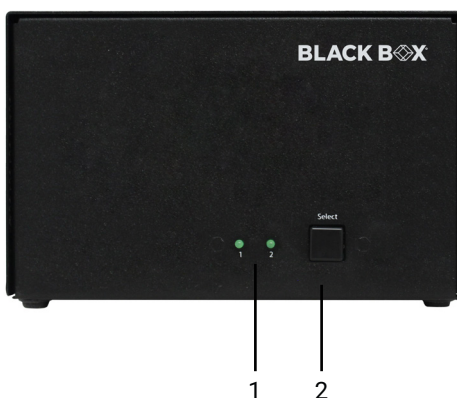Figure 2-1 shows the front panel of the KV4402A. Table 2-1 describes its components.



FIGURE 2-1. FRONT PANEL OF THE KV4402A

**TABLE 2-1. KV4402A  FRONT-PANEL COMPONENTS**

| NUMBER IN FIGURE 2-1 | COMPONENT | DESCRIPTION |
|---|---|---|
| 1 | (2) Computer LEDs | Computer 1 or 2 |
| 2 | (1) Activity button and LED | Press the button to navigate between connected computers. The LED lights when the corresponding computer is active. |

# CHAPTER 2: KV4402A

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## 2.4.2 BACK PANEL

Figure 2-2 shows the back panel of the KV4402A . Table 2-2 describes its components.



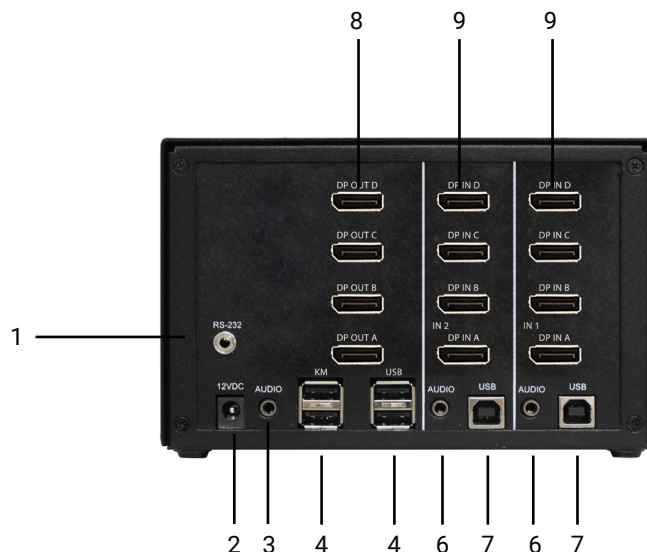FIGURE 2-2. BACK PANEL OF THE KV4402A

**TABLE 2-2. KV4402A  BACK-PANEL COMPONENTS**

| NUMBER IN FIGURE 2-2 | COMPONENT | DESCRIPTION |
| --- | --- | --- |
| 1 | (1) 3.5mm connector | Used for RS-232 control (TRS) |
| 2 | (1) barrel connector | Links to 12VDC power supply |
| 3 | (1) 3.5mm Audio OUT connector | Connects to output audio |
| 4 | (4) USB Type A connectors | Connects to device output interfaces |
| 6 | (2) 3.5mm Audio IN connectors | Connectors to input audio |
| 7 | (2) USB Type B connectors | Connects to device input interfaces |
| 8 | (2) DisplayPort™ 1.2a female connectors | Links to Output A, Output B, Output C, and Output D |
| 9 | (8) DisplayPort 1.2a female connectors | Links to Inputs 1A, 2A, 3A, 4A, 1B, 2B, 3B, 4B, 1C, 2C, 3C, 4C, 1D, 2D, 3D, and 4D |

# CHAPTER 2: KV4402A

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## 2.5 HARDWARE INSTALLATION

1.  Ensure that power is turned off or disconnected from the unit and the computers.
2.  Use a DisplayPort™ cable to connect the DisplayPort output port from each computer to the corresponding DP IN ports of the unit.
3.  Use a USB cable (Type-A to Type-B) to connect a USB port on each computer to the respective USB ports of the unit.
4.  Optionally connect a stereo audio cable (3.5mm to 3.5mm) to connect the audio output of the computers to the AUDIO IN ports of the unit.
5.  Connect a monitor to the DP OUT console port of the unit using a DisplayPort cable.
6.  Connect a USB keyboard and mouse in the two USB console ports.
7.  Optionally connect stereo speakers to the AUDIO OUT port of the unit.
8.  Finally, power on the KVM by connecting a 12VDC power supply to the power connector, and then turn on all the computers.

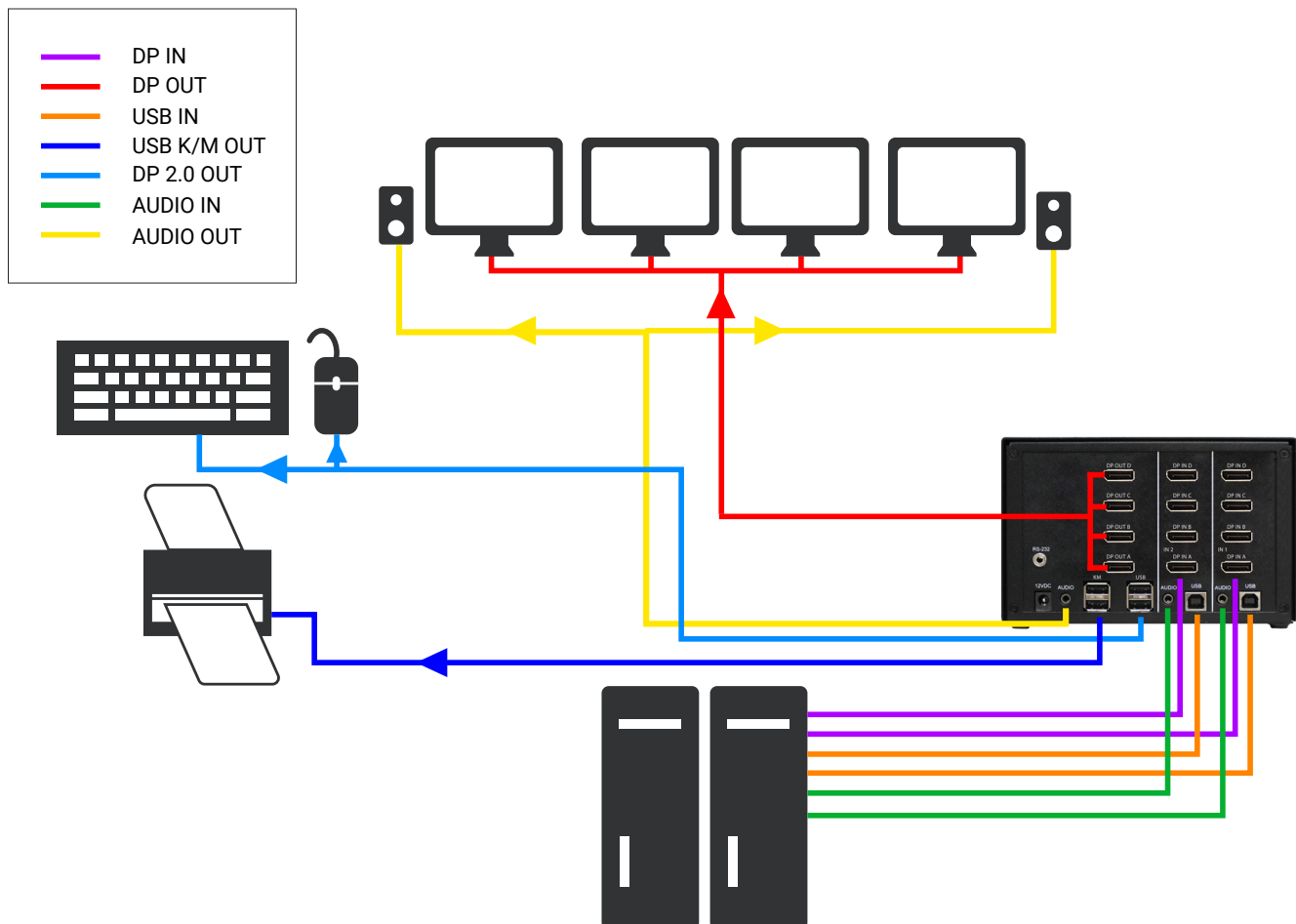Note: You can connect up to 2 computers to the 2 port KVM.



FIGURE 2-3. TYPICAL INSTALLATION

## 3.1 INTRODUCTION

KV4404A, the DisplayPort™ Quad-Head KVM Switch - 4-Port, is a dedicated multi-platform KVM switch capable of managing four quad-head 4K computers through a single KVM. Built with 4K ready DisplayPort outputs, it offers full 4K at 60 Hz directly from the device. KV4404A supports screen resolutions up to 4K (3840 x 2160 @ 30 Hz) or 4K60 Hz if using high-quality DisplayPort cables. Additionally, it is compatible with most USB peripherals.

The KVM Switch is also easy to control with both a simple front-panel interface, as well as RS-232 or hot-keys.

- Source switching made easy: The KVM Switch offers simplified management between four quad-head DisplayPort equipped computers' USB 2.0 outputs. Keyboards, mice, and other connected USB devices can be switched between with ease. This dynamic KVM switch can be controlled via hot keys or RS-232 commands, as well as directly through the console's easy-to-read front panel.

- EDID passthrough and recognition: The KVM Switch features EDID passthrough technology and source recognition, which enable smooth and efficient switching in virtually any scenario. This plug-and-play EDID functionality makes set up hassle-free and simple.

- Full USB keyboard and mouse emulation: The USB keyboard and mouse emulation used by the KVM Switch provides quick source switching via keyboard hotkeys. The KVM Switch simulates the presence of a keyboard and mouse for every attached computer. This essential function simulates keyboard and mouse control for all connected computers, so switching between each is kept seamless and completely uninterrupted.

## 3.2 FEATURES

- Supports up to 4K (3840 x 2160) @ 60 Hz with high-quality DisplayPort cables or up to 4K (3840 x 2160) @ 30 Hz with low-quality DisplayPort cables
- Supports 3D
- Supports LPCM, Dolby-AC3, DTS7.1, and DSD/Dolby TrueHD/DTS-HD master audio
- Supports DisplayPort1.2a
- Control up to four quad-head computers with a single KVM
- Zero pixel loss with TMDS signal correction
- Supports USB keyboard-mouse emulation
- Supports all USB 2.0 devices
- Uses hotkey commands for quick channel selection
- Independent (asynchronous) switching of KVM and peripheral USB ports, enabling functions such as scanning a document and saving it on a different computer.
- Complete KVM emulation for error-free booting
- Easy switching via front-panel, RS-232, or hotkeys
- Full DisplayPort support with backward compatibility

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## 3.3 WHAT'S INCLUDED

Before you install this switch, verify that your package contains the following items:

- (1) DisplayPort™ Quad-Head KVM Switch - 4-Port
- (1) 12VDC, 3A power adapter
- (1) Power cord

If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

## 3.4 HARDWARE DESCRIPTION

### 3.4.1 FRONT PANEL

Figure 3-1 shows the front panel of the KV4404A. Table 3-1 describes its components.



FIGURE 3-1. FRONT PANEL OF THE KV4404A

**TABLE 3-1. KV4404A  FRONT-PANEL COMPONENTS**

| NUMBER IN FIGURE 3-1 | COMPONENT | DESCRIPTION |
|---|---|---|
| 1 | (4) Computer LEDs and activity buttons | Press the button to navigate between connected computers: 1, 2, 3, 4. The LED lights when the corresponding computer is active. |

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# CHAPTER 3: KV4404A

## 3.4.2 BACK PANEL

Figure 3-2 shows the back panel of the KV4404A. Table 3-2 describes its components.
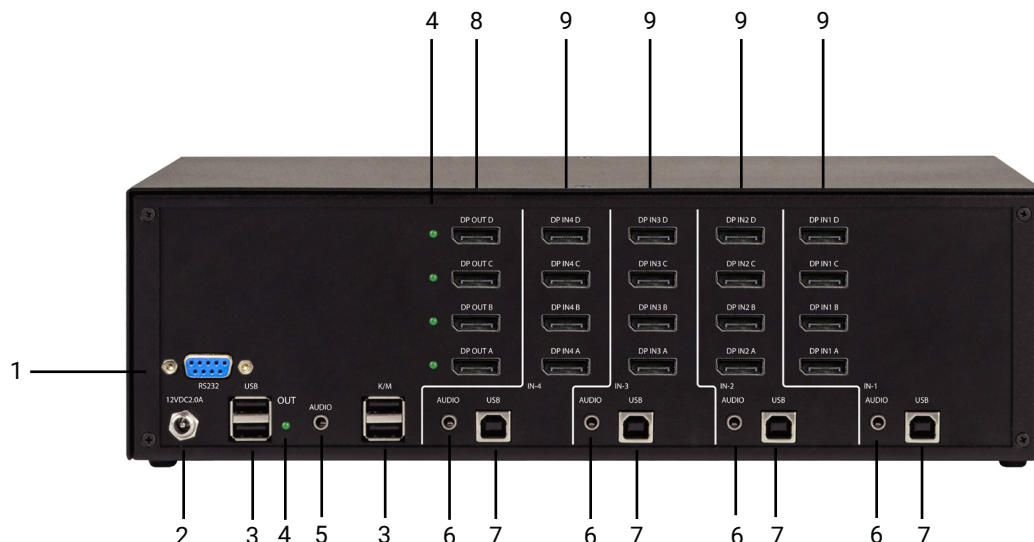


FIGURE 3-2. BACK PANEL OF THE KV4404A

### TABLE 3-2. KV4404A BACK-PANEL COMPONENTS

| NUMBER IN FIGURE 3-2 | COMPONENT | DESCRIPTION |
|---|---|---|
| 1 | (1) DB9 female connector | Used for RS-232 control |
| 2 | (1) Barrel connector | Links to 12VDC power supply |
| 3 | (4) USB Type A connectors | Connects to device output interfaces |
| 4 | (5) LED lamps | Indicates option is active when illuminated. |
| 5 | (1) 3.5mm Audio OUT connector | Connects to output audio |
| 6 | (4) 3.5mm Audio IN connectors | Connectors to input audio |
| 7 | (4) USB Type B connectors | Connects to device input interfaces |
| 8 | (2) DisplayPort™ 1.2a female connectors | Links to Output A, Output B, Output C, and Output D |
| 9 | (8) DisplayPort 1.2a female connectors | Links to Inputs 1A, 2A, 3A, 4A, 1B, 2B, 3B, 4B, 1C, 2C, 3C, 4C, 1D, 2D, 3D, and 4D |

# CHAPTER 3: KV4404A

## 3.5 HARDWARE INSTALLATION

1. Ensure that power is disconnected from the KVM Switch.
2. Connect the DisplayPort™ cables and USB cables (male-A to male-B) from the computers to the respective ports on the KVM Switch.
3. Optionally connect audio cables from the computers to the respective ports on the KVM Switch.
4. Optionally connect RS-232 for control functions.
5. Connect the USB keyboard and mouse to the two USB ports with keyboard and mouse symbols, respectively.
6. Optionally connect speakers to the KVM Switch.
7. Optionally connect up to two USB peripheral devices, such as printers or flash drives.
8. Connect the display monitors to the OUTPUT connectors on the KVM Switch.
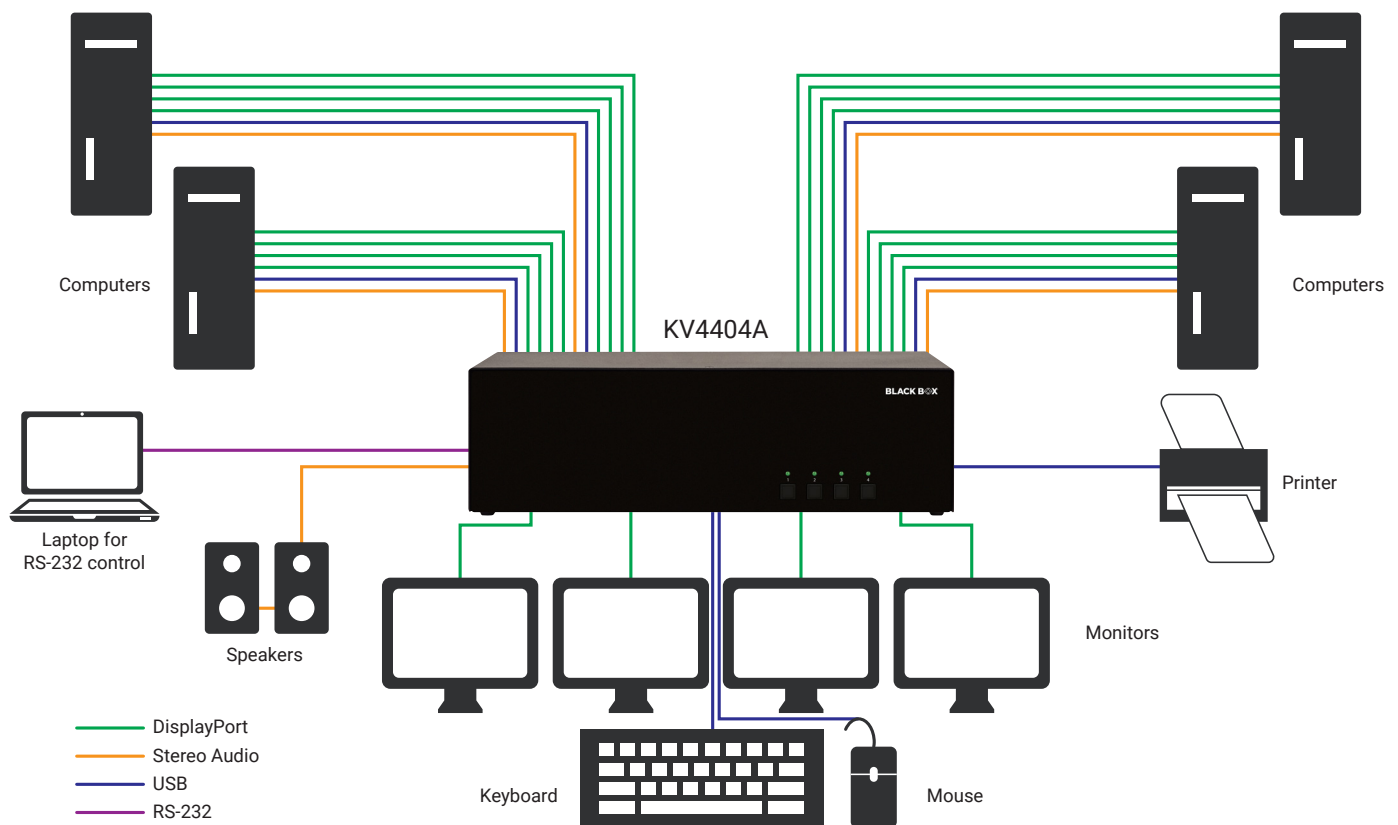9. Power on the KVM Switch.

FIGURE 3-3. TYPICAL INSTALLATION

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To switch to an input port, simply push the button on the front-panel of the KVM. If an input port is selected, the LED of that port will turn on.
Hold down the button of Front Panel for 3 seconds to force learn EDID.

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# CHAPTER 5: HOTKEY COMMANDS

The device may also be controlled via RS-232 commands. To use these commands, you must use HyperTerminal or an alternate terminal application. The settings for the connection are as follows:
Baudrate 115200; Data Bits 8; Parity None; Stop Bits 1; Flow Control None.

When the serial interface is connected, you will see information about the switch display within the COM port viewer.

See Table 5-1.

### TABLE 5-1. COMMANDS

| COMMANDS | HOTKEYS | RS-232 CONTROL |
|---|---|---|
| Switch all devices (KVM, USB 2.0, and Audio) | [CTRL] [CTRL] [port #] [ENTER] *Please note there is no "m" for this command | //m [port #] [ENTER] |
| Switch KVM only | [CTRL] [CTRL] c [port #] [ENTER] | //c [port #] [ENTER] |
| Switch Audio only | [CTRL] [CTRL] a [port #] [ENTER] | //a [port #] [ENTER] |
| Switch USB 2.0 only | [CTRL] [CTRL] u [port #] [ENTER] | //u [port #] [ENTER] |
| EDID Learning | [CTRL] [CTRL] e [ENTER] | //e [ENTER] |
| Trigger Hotplug | [CTRL] [CTRL] h [ENTER] | //h [ENTER] |
| Next port | [CTRL] [CTRL] [up-arrow] | N/A |
| Previous port | [CTRL] [CTRL] [down-arrow] | N/A |
| Reset | [CTRL] [CTRL] r | //r |
| Factory Default Reset | [CTRL] [CTRL] f | //f |
| Get Port Status | N/A | //?? [ENTER] |
| Disable port 4 (KV4404A model) | [CTRL] [CTRL] d 4 [ENTER] | N/A |
| Disable port 3 and 4 (KV4404A model) | [CTRL] [CTRL] d 3 [ENTER] | N/A |

Users are able to customize the keys that trigger Hotkeys. The default trigger for hot key function on the keyboard is Ctrl + Ctrl. The trigger function can be used to change to the following keys:

Ctrl (Left / Right), Alt, Shift (Left / Right), Caps Lock, Scroll Lock, F1-F12

TO VIEW HOTKEY TRIGGER SETTING
Use the RS-232 command: / + / + ? + ? + Enter to view the current HotKey Trigger To reset the Hotkey Trigger use the "Factory Defaults" command.

TO CHANGE THE HOTKEY TRIGGER SETTING
HotKey + HotKey + x + [desired hotkey]

Example: If users current Hotkey trigger is Shift and want to change to Scroll Lock, user would type Shift + Shift + x + Scroll Lock

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Controlling the KVM Switch via RS-232 requires an RS-232 card installed on your computer or a USB to RS-232 adapter.

Check the KVM Switch and your computer to determine if you need a male-to-male or a male-to-female cable and the required length. The KVM Switch requires a straight-through cable. You can use a null-modem adapter to convert a crossed cable to a straightthrough cable. An example of a straight through cable pinout is shown in Figure 6-1. The standard maximum length for an RS-232 cable is 50 feet (15.2 meters). Contact Black Box Technical Support at 877-877-2269 or info@blackbox.com if you require more information.
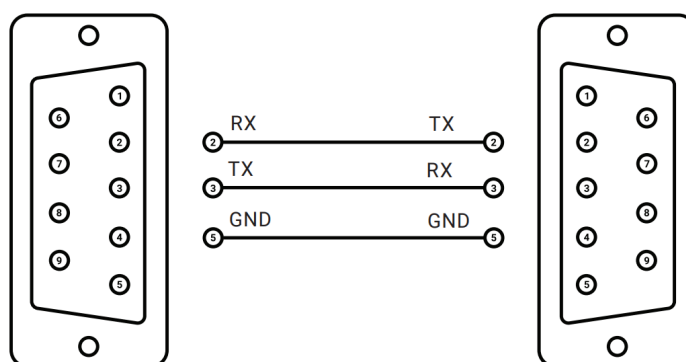


FIGURE 6-1. RS-232 DB9-TO-DB9 STRAIGHT-THROUGH CABLE

You will need to identify the COM port number used. On a Windows PC:
1. Click on the start button.
2. Click on Control Panel.
3. Click on Device Manager.
4. Click on the arrow next to Ports (COM & LPT).
The COM port number in use will be displayed.

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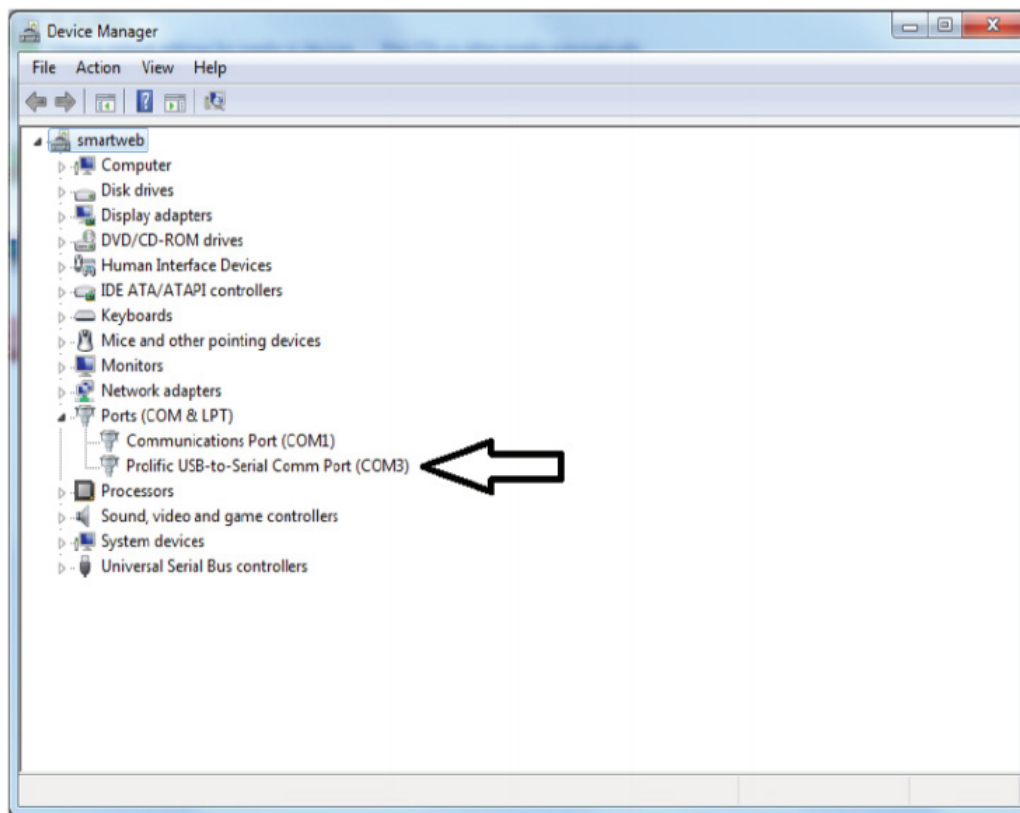SUPPORT
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# CHAPTER 6: RS-232 CONTROL



FIGURE 6-2. COM PORT NUMBER

Run the terminal client of your choice ,such as HyperTerminal or PuTTY. Select the correct COM port on the computer. Use the following connection settings: 115200, N, 8, 1, no flow control.
Cycling power on your unit will display a boot up message in your terminal software if the connection is correct.

NOTE: Your terminal software may not default to or display all of the settings above. If you attempt to connect and the settings above are not set correctly, after you adjust the settings you may need to cycle power on your unit for communication to be established.

See Table 5-1 for a list of RS-232 commands.

# CHAPTER 7: TROUBLESHOOTING

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**No Power**
- Make sure that the power adapter is securely connected to the power connector of the unit.
- Check the output voltage of the power supply and make sure that the voltage value is around 12VDC.
- Replace the power supply.

**No Video**
- Check if all the video cables are connected properly.
- Connect the computer directly to the monitor to verify that your monitor and computer are functioning properly.
- Restart the computers.

**Keyboard is not working**
- Check if the keyboard is properly connected to the unit.
- Check if the USB cables connecting the unit and the computers are properly connected.
- Try connecting the USB on the computer to a different port.
- Make sure that the keyboard works when directly connected to the computer.
- Replace the keyboard.

**Mouse is not working**
- Check if the mouse is properly connected to the unit.
- Try connecting the USB on the computer to a different port.
- Make sure that the mouse works when directly connected to the computer.
- Replace the mouse.

**No Audio**
- Check if all the audio cables are connected properly.
- Connect the speakers directly to the computer to verify that the speakers and the computer audio are functioning properly.
- Check the audio settings of the computer and verify that the audio output is through the speakers.

# APPENDIX A: REGULATORY INFORMATION

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## A.1 FCC CLASS A STATEMENT

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 tooperate 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.

# APPENDIX A: REGULATORY INFORMATION

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## A.2 NOM STATEMENT

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 a 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.

NEED HELP?
LEAVE THE TECH TO US
LIVE 24/7
TECHNICAL
SUPPORT
1.877.877.2269

# APPENDIX B: DISCLAIMER/TRADEMARKS

## B.1 DISCLAIMER

Black Box Corporation shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Corporation may revise this document at any time without notice.

## B.2 TRADEMARKS USED IN THIS MANUAL

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