

# DPN-4 Quad

## User Manual

4-Port DisplayPort KVM Switch with USB 2.0 and Audio  
Supports 4 Computers with 4 DisplayPort Monitors each



Multi-platform KVM switch capable of managing up to 4 different computers through four DisplayPort monitors, one USB keyboard & USB mouse

**Smart-AVI**  
SMART AUDIO VIDEO INNOVATION

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## WHAT'S IN THE BOX?

PART NO.	QTY	DESCRIPTION
DPN-4QUADS	1	DPN-4Quad, 4x4 DisplayPort, USB 2.0, Audio Switch.
PS5VDC4A	1	Power Adapter
	1	Quick Start Guide

Brackets for mounting this device in a standard 19" rack may be optionally ordered from Smart-AVI.



Figure 2-1



Figure 2-2

## **INTRODUCTION**

The DPN-4 Quad is a dedicated multi-platform KVM switch capable of managing up to 4 different computers through four DisplayPort monitors, one USB keyboard & mouse and a single set of speakers.

The USB emulation technology utilized by the DPN-4 Quad enables immediate hotkey source switching through a remote USB keyboard and mouse. The DPN-4 Quad uses DisplayPort connectors providing high resolutions of up to 4K (3840x2160 @ 30Hz) with zero pixel loss from TMDS signal correction.

### **SOURCE SWITCHING MADE EASY**

The DPN-4Quad provides a simplified management approach to up 4 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 & PROGRAMMING**

Detection of DDC signals for all attached devices is effortless with DPN-4Quad 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. Furthermore, the EDID learning feature continues to replicate the right DDC for the computer to enable the display card to effectively work when unused ports are not selected.

### **FULL USB KEYBOARD AND MOUSE EMULATION**

The USB keyboard and mouse emulation utilized by DPN-4Quad provides accurate and quick source switching by means of keyboard hotkeys and mouse actions. DPN-4Quad 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.

## **APPLICATIONS**

The DPN-4Quad has a broad range of applications, but the main function of this KVM switch is to centralize the access of several computers into one comprehensive PC. Not only does it function as a KVM console, it also supports USB 2.0 functionality. This allows a user at the console to use USB devices that would otherwise be unavailable with conventional KVM devices. For example, it allows a user to use a flash memory drive or camera without having to plug it directly into the remote computer. DPN-4Quad is a perfect solution for the medical or industrial field, where it may not be practical or safe to have one or more CPUs in the general vicinity.

- Server Collocation
- Digital Signage
- Education
- Airports
- Dealer Rooms
- Control Rooms
- Audio/Visual Presentations
- Shopping Centers
- Hotels/Resorts
- KVM Switches

## TECHNICAL SPECIFICATIONS

<b>VIDEO</b>	
Format	DisplayPort 1.2
Link Rate	5.4 Gbps/lane
Input Interface	(16) DisplayPort (female)
Output Interface	(4) DisplayPort (female)
Resolution	(3840x2160 @30Hz)
DDC	Faux transaction mode option over Aux channel
Input Equalization	Automatic
Bandwidth Frequency	10.2Gbps
<b>AUDIO</b>	
Input Interface	(4) 3.5 mm Stereo Audio
Output Interface	(1) 3.5 mm Stereo Audio
Impedance	600 Ohm
Frequency Response	20 Hz to 20 kHz
Nominal Level	0-1.0 V
Common Mode	Rejection at 60 dB
<b>USB</b>	
Signal Type	USB 2.0, 1.1, and 1.0 w/ internal hub
Input Interface	(4) USB Type B (female)
Output Interface	(2) USB 1.1 Type A (female) for keyboard and mouse
	(2) USB 2.0 Type A Transparent
<b>CONTROL</b>	
Front Panel	Buttons, Select/Switch between Video & Audio sources and view the current selected channel.
RS-232	DB9 Female - 9600 N,8,1, No flow control
Hot Keys	Via Keyboard
<b>OTHER</b>	
Power Adapter	External 100-240 VAC/ 5VDC2A
Consumption	20 W (Max)
Dimensions	4.5" H x 6" D x 12.75" W
Weight	5.6 lbs
Operating Temp.	+23 to +95 °F (-5 to +35 °C)
Storage Temp.	-4 to 185 °F (-20 to 85 °C)
Humidity	up to 90% (No Condensation)
Emulation	Keyboard and mouse only

# HARDWARE INSTALLATION

1. Ensure that power is disconnected from the DPN-4 Quad.
2. Connect the DisplayPort cables, USB cables (male-A to male-B) and Audio cables from the computers to the respective ports on the DPN-4 Quad.
3. Optionally connect RS-232 for control functions.
4. Connect the USB keyboard and mouse to the two USB ports marked for them on the right.
5. Connect the DisplayPort monitors to the OUT connectors on the DPN-4 Quad.
6. Connect speakers to the Audio out jack on the DPN-4 Quad.
7. Power on the DPN-4 Quad.

**Note:** The 2 USB ports on the right are dedicated for keyboard and mouse emulation. The 2 on the left are for other USB peripherals. (flash drives, printers, etc.)

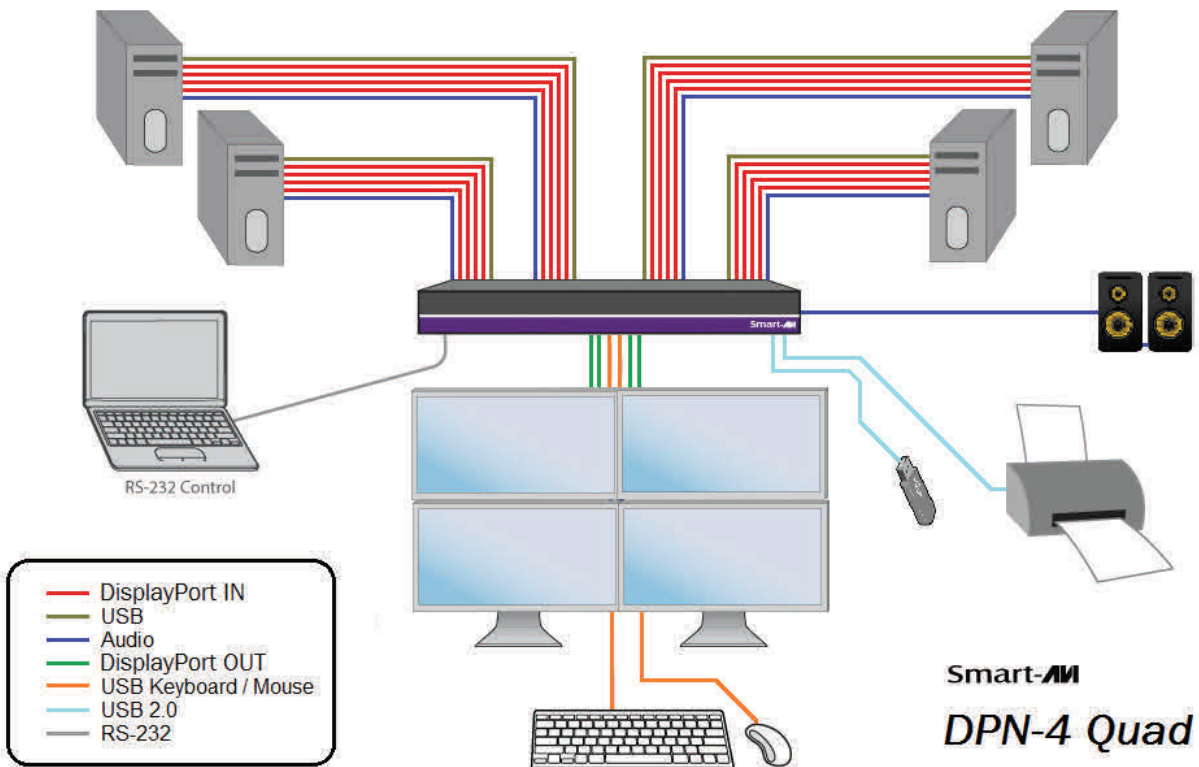


Figure 5-1



Figure 5-2

# CONTROL

## Front Panel Control

To switch ports using the front panel, press the M1 or M2 button to navigate from computer to computer. The numbered LED lights will indicate which computer is selected.



Figure 6-1

## Hotkey Commands

A Hotkey command is a keyboard sequence used to trigger an action on the DPN-4 Quad through the use of the keyboard connected on the USB port of the DPN-4 Quad. To activate the hotkey sequence, press the CTRL key twice and then enter the desired hotkey commands. Hotkey commands are listed below.

## RS-232 Control

RS-232 control allows for remote control of the DPN-4 Quad. See the section on establishing an RS-232 connection in this manual. Set the connection to 9600 N,8,1, No flow control. RS-232 commands are listed below.

COMMANDS	HOTKEYS	RS-232 CONTROL
Switch all devices (KVM, USB 2.0, and Audio)	[CTRL] [CTRL] m [port #] [ENTER]	//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]
Same as front panel up arrow button	[CTRL] [CTRL] ↑	n/a
Same as front panel down arrow button	[CTRL] [CTRL] ↓	n/a
Reset	[CTRL] [CTRL] r	//r

Table 6-2

## ESTABLISHING AN RS-232 CONNECTION

### Before you start:

Controlling a Smart-AVI device via RS-232 requires an RS-232 card installed on your computer or a USB to RS-232 adapter. Below are instructions on how to create an RS-232 connection between a PC and the Smart-AVI device.

Use terminal client software such as the PuTTY to connect to the Smart-AVI device. Make sure to use communication settings 9600 bps, N, 8, 1, No flow control.

Check the device and your PC to determine if you need a male to male or a male to female cable and how long it needs to be. The Smart-AVI device requires a straight through cable. You can use a Null Modem Adapter to convert a crossed cable to a straight through cable. Examples of crossed and straight through cable pin-outs are shown below. The standard maximum length for an RS-232 cable is 50 feet. Call our Smart-AVI Support Engineer if you require more information.

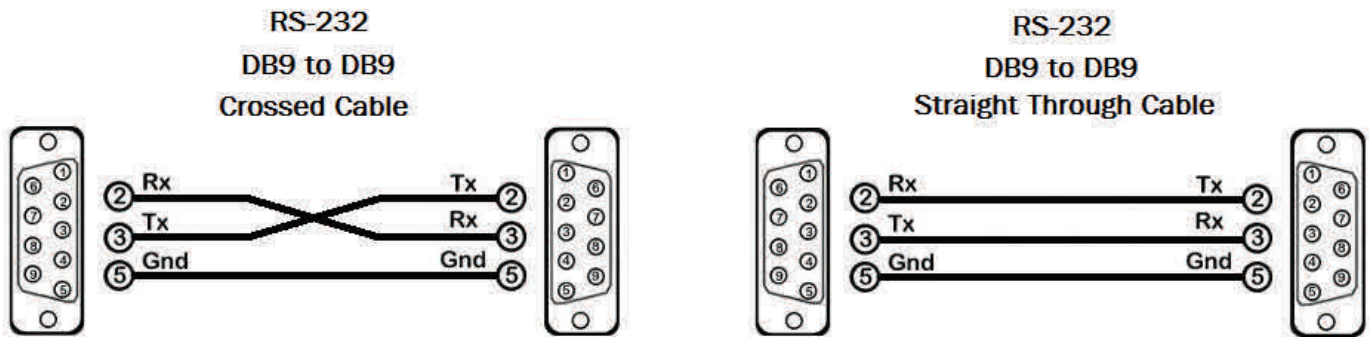


Figure 7-1  
Examples of 9 pin RS-232 Straight Through and Crossed Cables

### Establish a connection to the Smart-AVI device:

1. Connect an RS-232 cable to the RS-232 connector on the PC.
2. Connect the other end of the cable to the RS-232 port of the Smart-AVI device.
3. Use Windows Control Panel / Device Manager to identify the Com port number. See instructions and Figure 7-2 below.
4. Power on the device.

If you are using a USB to COM port adapter on a Windows PC and need to identify the COM port used, do the following:

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).

You should see the name of your adapter and the COM port number in use.

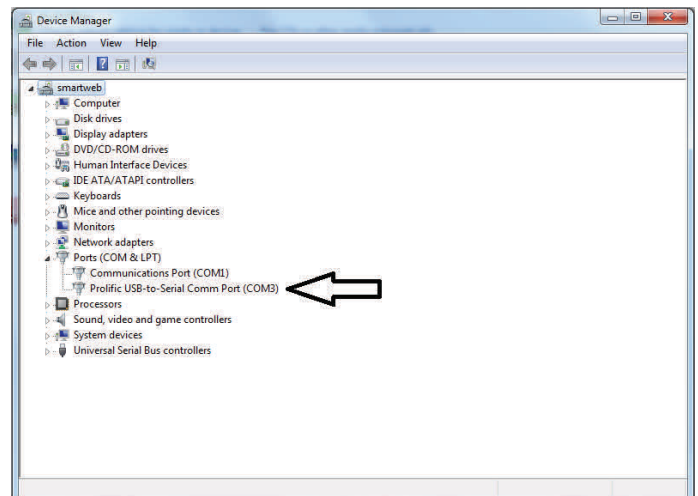


Figure 7-2



# LIMITED WARRANTY STATEMENT

## A. Extent of limited warranty

Smart-AVI Technologies, Inc. warrants to the end-user customers that the Smart-AVI product specified above will be free from defects in materials and workmanship for the duration of 1 year, which duration begins on the date of purchase by the customer. Customer is responsible for maintaining proof of date of purchase.

Smart-AVI limited warranty covers only those defects which arise as a result of normal use of the product, and do not apply to any:

- a. Improper or inadequate maintenance or modifications
- b. Operations outside product specifications
- c. Mechanical abuse and exposure to severe conditions

If Smart-AVI receives, during applicable warranty period, a notice of defect, Smart-AVI will at its discretion replace or repair defective product. If Smart-AVI is unable to replace or repair defective product covered by the Smart-AVI warranty within reasonable period of time, Smart-AVI shall refund the cost of the product.

Smart-AVI shall have no obligation to repair, replace or refund unit until customer returns defective product to Smart-AVI.

Any replacement product could be new or like new, provided that it has functionality at least equal to that of the product being replaced.

Smart-AVI limited warranty is valid in any country where the covered product is distributed by Smart-AVI.

## B. Limitations of warranty

To the extent allowed by local law, neither Smart-AVI nor its third party suppliers make any other warranty or condition of any kind whether expressed or implied with respect to the Smart-AVI product, and specifically disclaim implied warranties or conditions of merchantability, satisfactory quality, and fitness for a particular purpose.

## C. Limitations of liability

To the extent allowed by local law the remedies provided in this warranty statement are the customers sole and exclusive remedies.

To the extent allowed by local law, except for the obligations specifically set forth in this warranty statement, in no event will Smart-AVI or its third party suppliers be liable for direct, indirect, special, incidental, or consequential damages whether based on contract, tort or any other legal theory and whether advised of the possibility of such damages.

## D. Local law

To the extent that this warranty statement is inconsistent with local law, this warranty statement shall be considered modified to be consistent with such law.



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20161020



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