

# DVR 4X4

## User Manual

### 4-port DVI-D Matrix Switch



Display Content From Any 4 Computers On Any 4 Screens  
Independently Up To 20 Feet Away

**Smart-AMI**  
SMART AUDIO VIDEO INNOVATION

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## WHAT'S IN THE BOX

PART NO.	QTY	DESCRIPTION
DVR4X4S	1	DVI-D 4x4 Router
PS5VDC4A	1	Power Adapter
BRK-SKM08	-	Optional, Rack mount brackets
	1	Quick Start Guide



Figure 2-1

## INTRODUCTION

The DVR 4x4 is a high-quality switching matrix for up to 4 computer/display signals. The DVR 4X4 can be placed up to 20 feet away from the attached computers or signal sources. The displays can be placed up to 20 feet away from the DVR 4X4. This results in up to 40 feet between the computers and the displays. The DVR 4X4 supports DVI-D operation at the maximum TMDS rate of 1.65 Gb/s on both the input and output signals up to 20 feet in length each.

## FEATURES

- 4x4 non-blocking, single-link DVI-D matrix switch
- Supports resolutions up to 1080p, 2K, and 1920x1200
- Simultaneous 4x4 analog matrix switching at 380 MHz bandwidth
- Control from either the Front Panel or RS-232
- Multiple EDID Support
- Programmable EDID from computer
- Automatic EDID learning from monitor
- Automatic receiver equalization
- Control from either Front Panel or remotely via RS-232
- Easy-to-use Windows based software

## APPLICATIONS

- Corporate or Educational Presentations
- Airport Installations
- Digital Signage
- Dealer Rooms
- Control Rooms
- Shopping Centers
- Security
- Wall Displays
- Digital Media
- Audio/Visual Presentations
- Point-of-Sale
- Hotels/Resort

## TECHNICAL SPECIFICATIONS

VIDEO	
Format	DVI-D Single Line
Input Interface (TX)	(4) DVI-D 29-pin (Female)
Output Interface (RX)	(4) DVI-D 29-pin (Female)
Resolution	Up to 1920x1200 @ 60Hz
DDC	5 volts p-p (TTL)
TMDS Rate	1.65Gb/s
Bandwidth	380 MHz
Pixel Clock	165 MHz Maximum
Input Equalization	Automatic
Input Cable Length	Up to 20 ft.
Output Cable Length	Up to 20 ft.
CONTROL	
Front Panel	Buttons, Select/Switch between sources and view the current selected channels.
RS-232	DB9 Female - 9600, N,8,1, No flow control
OTHER	
Power	External 100-240 VAC/5VDC4A
Dimensions	12" W X 6.5" D x 2" H
Weight	2.3 lbs.
Operating Temp.	32 to 131 °F (0 to 55 °C)
Storage Temp.	-4 to 185 °F (-20 to 85 °C)
Humidity	Up to 95% (No Condensation)

## HARDWARE INSTALLATION

1. Power off the computers and displays.
2. Connect the DVI video cables from the computers to the DVI-D inputs on the rear of the DVR 4X4.
3. Connect the DVI displays to the DVI-D outputs on the rear of the DVR 4X4.
4. Optionally connect a computer to the RS-232 port on the DVR 4X4 for additional remote control.
5. Power on the DVR 4X4.
6. Power on the computers and displays. If the monitors don't display correctly see **DDC Learning** .

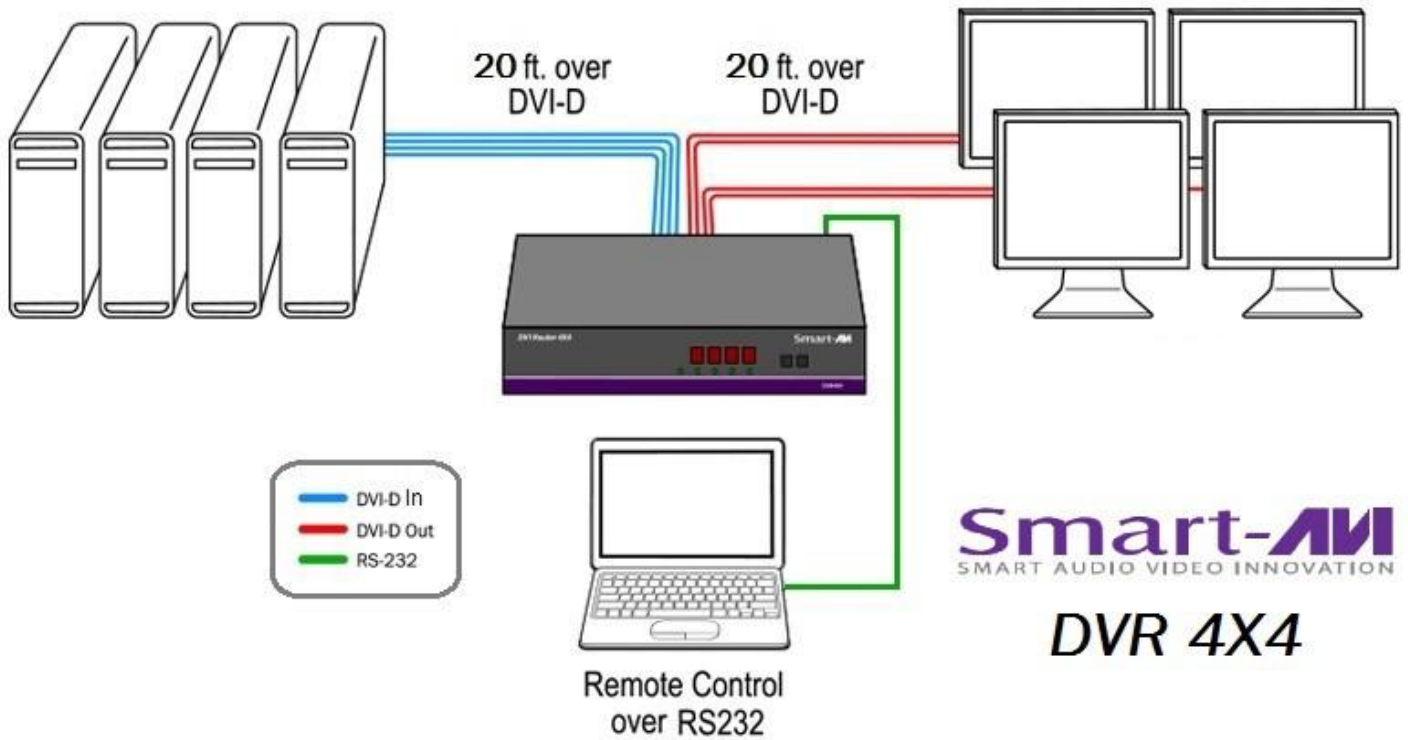


Figure 5-1



Figure 5-2

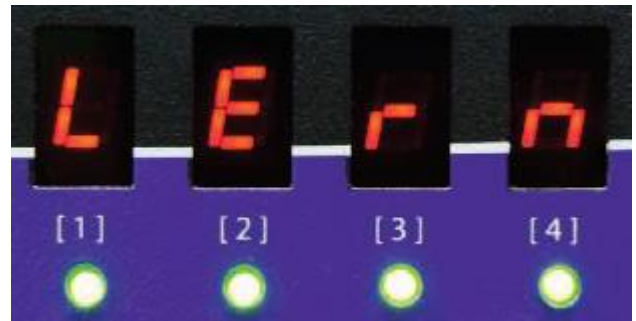
## DDC LEARNING

DDC provides plug-and-play capability to your displays. When you plug a display into your computer, the DDC table in the display tells the computer the optimal resolution to use. In order to preserve this plug-and-play capability, we have integrated DDC learning into all of our DVI Solutions.

### DDC Learning Menu

Connect 1 monitor only to Output 1.

To access the DDC learning feature of the DVR4X4, press and hold both the **Input Select** and **Output Select** buttons simultaneously for 3 seconds to enter learning mode. The red LEDs will read **LErn**.

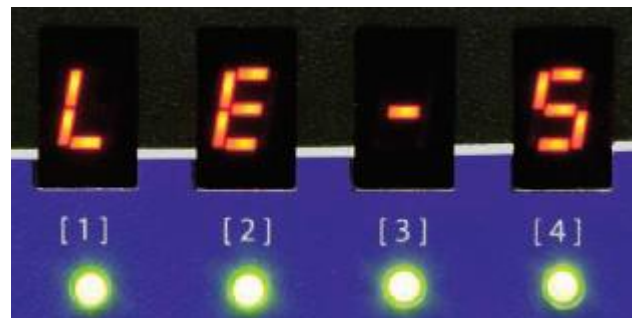


### MENU Options

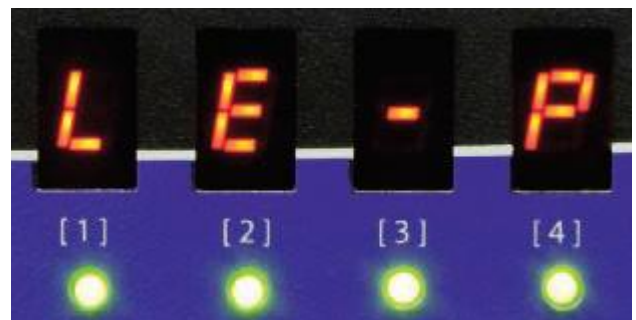
To cycle through the menu items, press **Input Select**. To select a menu item, press **Output Select** and you will exit the DDC menu. To exit the DDC menu, you must select a menu option.



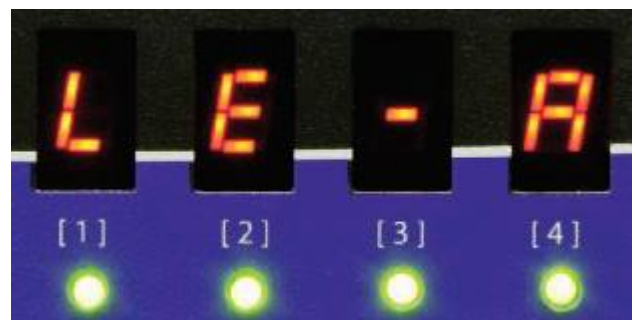
“LE-S” indicates Screen Mode, which learns the type of display connected to the [Out 1] output port. If no screen is detected the display will read **Err**. This DDC will be used by all the connected computers.



“LE-P” indicates Personal Computer Mode and automatically selects the standard display characteristics of a PC display, which typically works for any PC/Display combination. This DDC is stored in the Smart-AVI device and when selected will be used by all the connected computers.



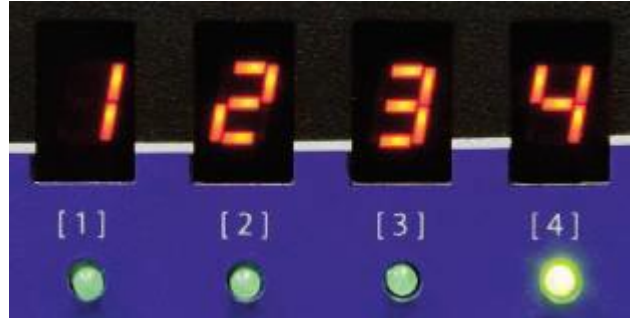
“LE-A” indicates Apple Mode and selects the best display mode to accommodate an Apple Mac. This DDC is stored in the Smart-AVI device and when selected will be used by all the connected computers.





## FRONT PANEL CONTROL

During normal operation, the unit will display the status of each output with four red LED number. The number indicates the current INPUT or source for each OUTPUT or display indicated by the green LED.



### Switching Between Ports

To select an output press **Output Select**.

The green LEDs will change to indicate the selected output.

Then press **Input Select** and the LED number will change to reflect the selected input. A few seconds later the selected input or source will display on the selected output or display.

## 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.

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. **This Smart-AVI device uses a straight through cable.** You can use a Null Modem Adapter to convert a straight through cable to a crossed cable or 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.

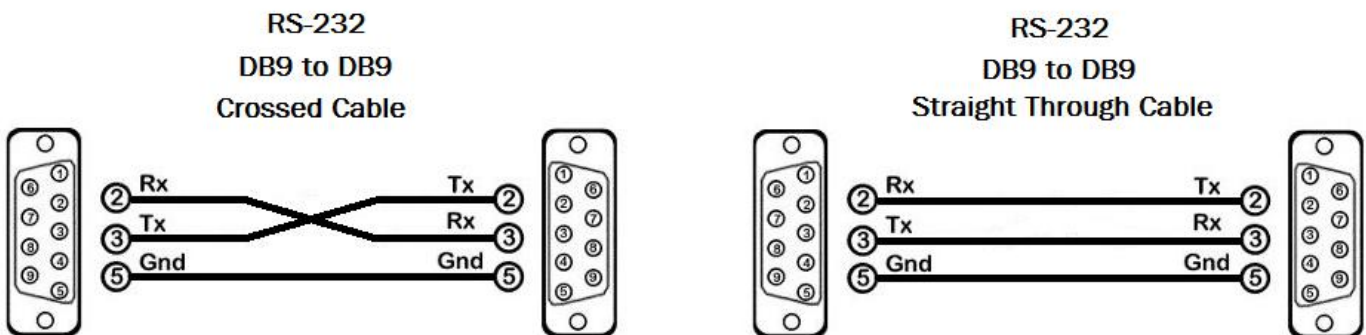


Figure 7-1  
Examples of 9 pin RS-232 Straight Through and Crossed Cables

## ESTABLISHING AN RS-232 CONNECTION (Continued)

### 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 device.
3. Use Windows Control Panel / Device Manager to identify the Com port number. **See Figure 8-1 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.

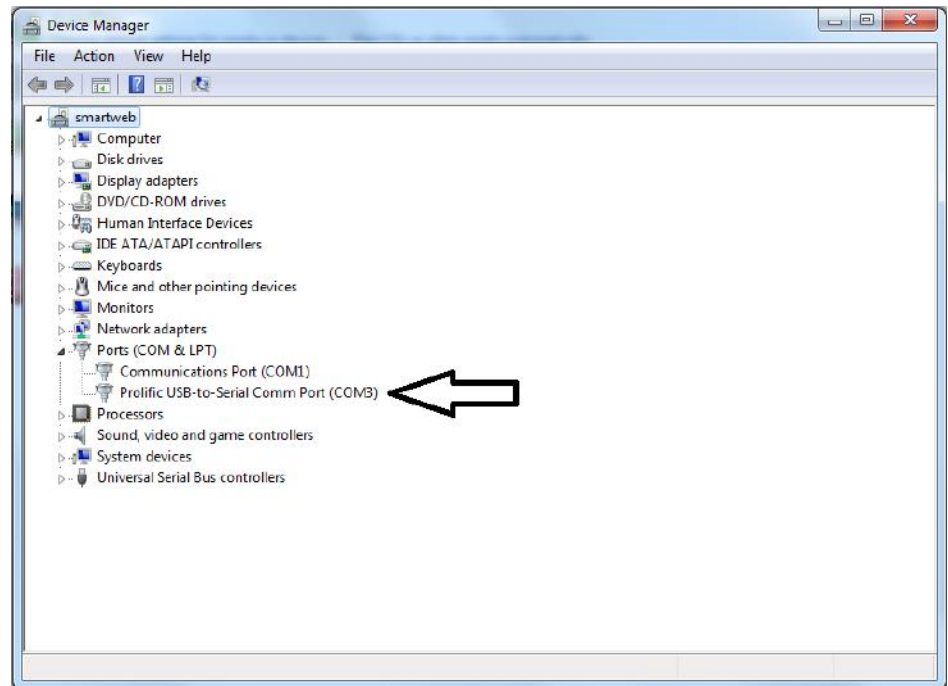


Figure 8-1

### RS-232 CONTROL WITH Smart Control Pro

Go to the Smart-AVI website, [www.smartavi.com](http://www.smartavi.com) and click Support.

On the Support page click on "HELPFUL LINKS TO SOFTWARE"

On the HELPFUL LINKS page click on **SmartControlPro**.

**SmartControlPro-v5-0-03\_Installer.zip** should begin to download.

When the download has finished open the .zip file and extract SmartControlPro-v5-0-03\_Installer.exe. Execute SmartControlPro-v5-0-03\_Installer.exe and follow the prompts to install the Smart Control Pro software on your PC.

When executed Smart Control Pro will present you with an opportunity to open a saved configuration. If you later develop a configuration that you frequently use you can save it and load it at this point but for the initial set up click "No".



Figure 8-2



## RS-232 CONTROL WITH Smart Control Pro (Continued)

The “Router Count” drop down selection is for users with more than 1 Smart-AVI device.

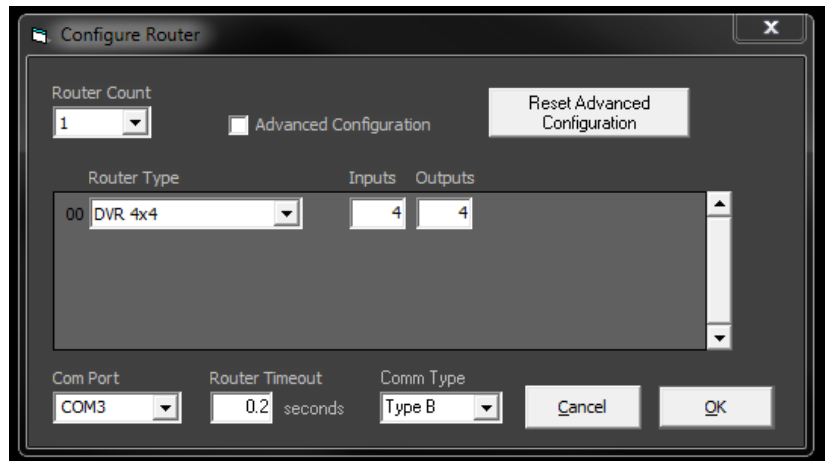


Figure 9-1

Use the “Router Type” drop down to select your connected Smart-AVI device from the list.

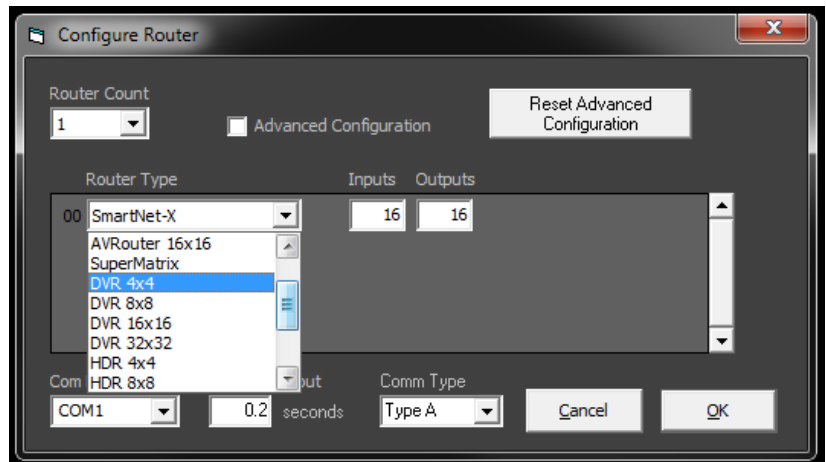


Figure 9-2

Select the COM port your computer is connected to your Smart-AVI device with from the “Com Port” drop down list. See the section on Establishing an RS-232 connection if you don't know which Com Port to select.

Click the “OK” button.

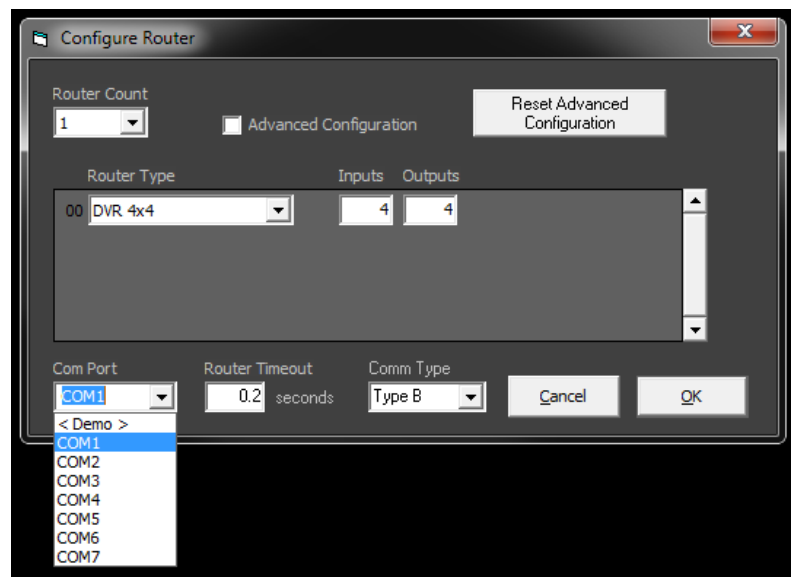
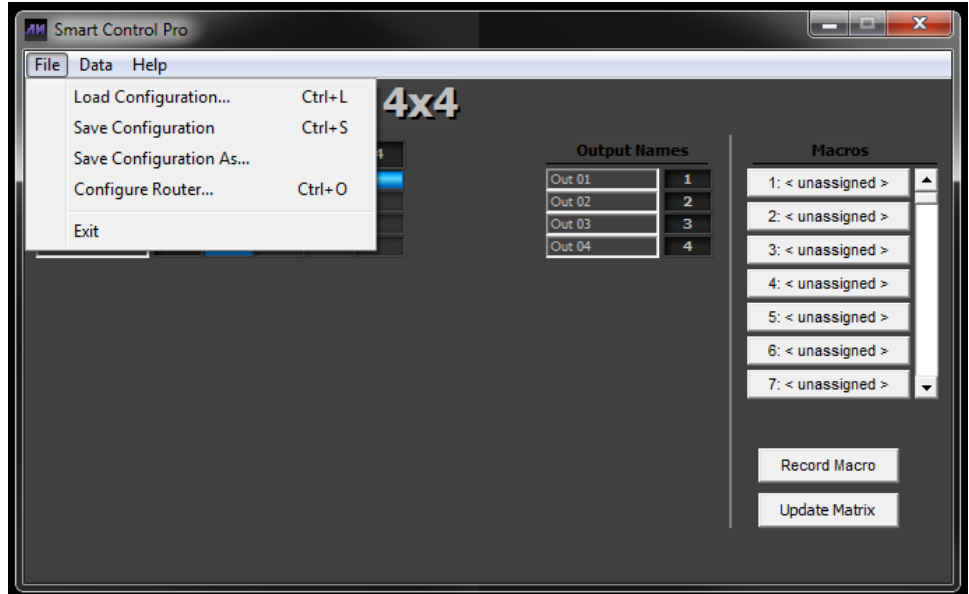


Figure 9-3

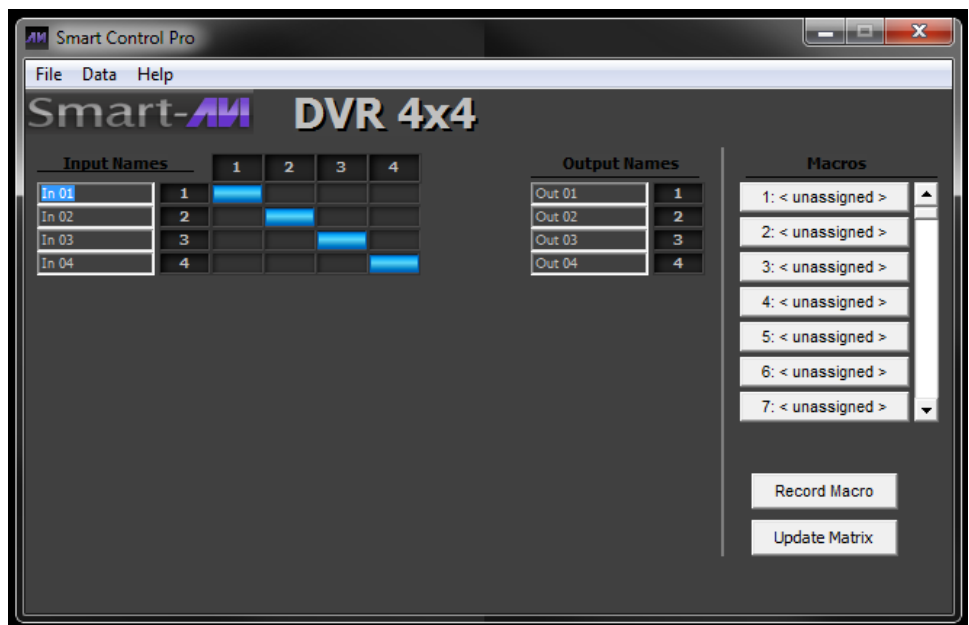
## RS-232 CONTROL WITH Smart Control Pro (Continued)

After clicking the “OK” button you will see the main page. Here by selecting the File Tab you can Create and save different configurations and load existing configurations.



By clicking on a square to the right of an Input and under an output you can switch that source to that display.

You can also create and store Macros and assign names to your input ports (sources) and output ports (Displays).



## 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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