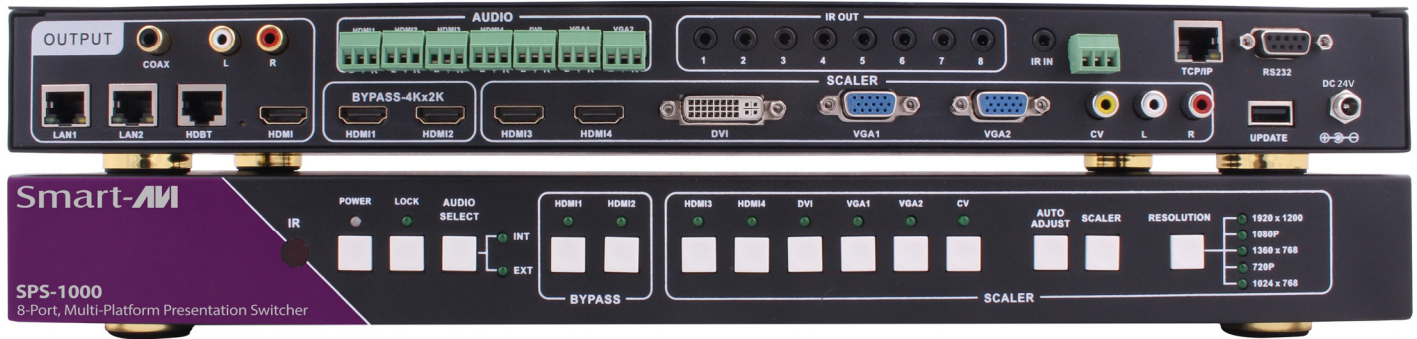


SPS-1000

User Manual

8-Port HDMI, DVI, VGA, and Composite Switch with Integrated Scaler



4-port HDMI, 2-port VGA, DVI and composite video switch
with IR and stereo audio support
(325 foot signal extension)

Smart-AM
SMART AUDIO VIDEO INNOVATION

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WHAT'S IN THE BOX?

PART NO.	QTY	DESCRIPTION
SPS-1000-S	1	8-Port Multi-Platform Presentation Switcher
PS24VDC1A	1	Power Supply / Adapter
SPS-BRK	2	Rack Mount Brackets
CCRS232MF06	1	RS-232 Cable Male to Female
RMT-SPS	1	IR Remote Control
	1	Quick Start Guide

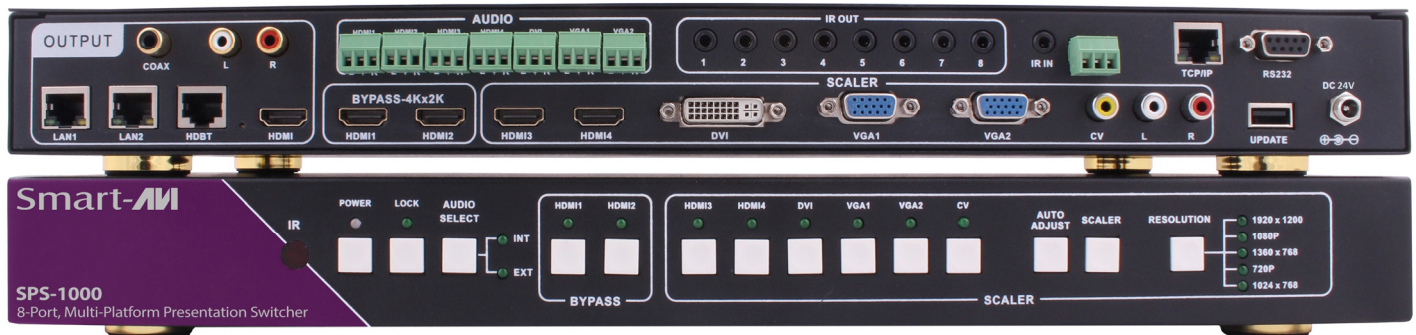


Figure 2-1

INTRODUCTION

From the boardroom to the classroom, a quality presentation requires an intelligent integration of technology and a user-friendly display of multimedia presentations. Too frequently, end users lack the ability to interface properly from their laptops, drives, and content sources to a meeting room's display. The new SPS-1000 from SmartAVI delivers impressive flexibility because it enables users to integrate a wide variety of A/V technology interfaces all from one easy-to-use device.

The SPS-1000 features eight input ports total, including four HDMI inputs, two VGA inputs, one DVI input and one RCA (analog stereo audio and video) input. The switcher has seven Phoenix audio connectors, one for each of the digital video inputs, and the audio from these inputs is automatically embedded with the corresponding video signal.

The SPS-1000 delivers HD scaling for top-notch video quality and compatibility, allowing users to get the best resolution from a variety of input sources and resolutions. Two of the HDMI inputs can bypass any scaling, which allows the device to support input and output resolutions up to 4K Ultra HD. For the other inputs, supported resolutions and scaling go up to 1920x1080 (@60Hz). With the infrared sensor on the front of the SPS-1000, the device can receive IR signals from various remotes and connect them to each connected input device for more convenient source control. The device features one local HDMI output, as well as two local audio outputs (one stereo analog RCA and one SPDIF digital coaxial).

LONG DISTANCE CONNECTIVITY

Many users will find they need to place the switcher in a more convenient and accessible location than their current A/V configuration allows, particularly considering the distance limitations of HDMI and other video cables. The SPS-1000 offers one RJ-45 output for extending HDMI signal output up to 325 feet from the switcher to the endpoint receiver over Cat5e/6/7 cables via HDBaseT technology. The Optional SPS-RX receiver features an HDMI output and an RJ-45 input, as well as IR connections and Phoenix audio ports for increased flexibility.

The Optional SRS-RX receiver is compact, making it easy to integrate next to nearly any display set up, and it has RS-232 and LAN outputs for additional control options. With POE (Power over Ethernet), there's no need to plug the receiver into an outlet for power.

FLEXIBLE CONTROL OPTIONS

The SPS-1000 is designed to provide a variety of control options to fit virtually any application. With RS-232 and LAN connections, users can control the device from a remote laptop. (The SPS-RX receiver unit is equipped for both RS-232 and LAN signals, as well.) The SPS-1000 also features front-panel buttons for easy switching right from the device itself, as well as an IR remote to switch between inputs and manage other basic functions.

FEATURES

- Eight video inputs, including four HDMI inputs, two VGA inputs, one DVI input and one RCA input
- One local HDMI output, with one local SPDIF digital coaxial audio output and one local RCA stereo audio Output
- Up to 325 feet of signal extension over Cat5e/6/7 cables with receiver unit using HDBaseT technology and POE (Power over Ethernet)
- Scales output resolutions up to 1080p
- Two HDMI ports with bypass to support 4K Ultra HD input and output
- Supports control via: RS-232, IR remote, front-panel buttons, and TCP/IP
- Seven Phoenix audio ports for each of the digital video inputs, with automatic audio embedding
- Supports SPDIF and stereo audio

TECHNICAL SPECIFICATIONS

VIDEO	
Video Input	(4) HDMI, (2) xVGA, (1) DVI, (1) Composite
Input Resolutions	Up to 4Kx2K@30Hz
Video Output	(1) HDMI (local), (1) RJ-45 HDBT (remote)
Output Resolutions	Up to 4Kx2K@30Hz(HDMI BYPASS), Up to 1920x1080P@60Hz(SCALES)
AUDIO	
Audio Input	(7) 3-Pin Phoenix Connector
Audio Output	(1) RCA (1) SPDIF Coaxial
IR	
Input ports	(1) 3.5 mm input
Output Ports	(8) 3.5 mm input (Corresponding to 8 Video Inputs)
CONTROL	
Front Panel	Buttons with LED setting indicators
RS-232	(1) DB9 Female, (1) 3-Pin Phoenix Connector
TCP-IP	(1) RJ-45
IR Remote Control	(1) Front Panel IR Sensor
OTHER	
Power Adapter	PS24VDC1A
Approvals	US/EU standards CE/FCC/UL certified
Dimensions	17.25"W x 1.9"H x 7.85"D
Weight	5 lbs.
Operating Temp.	32 °F to 104 °F (0 °C to 40 °C)
Storage Temp.	-4 °F to 140 °F (-20 °C to 60 °C)
Relative Humidity	20% to 90% (no condensation)
Power Consumption	14W (max)/1.8W (standby)
ESD Protection	Human-body Model: ± 8kV (Air-gap discharge), ± 4kV (Contact discharge)
USB Input	(1) Type A Firmware Update
LAN	(2) RJ-45

CONNECTING THE SPS-1000

1. Make sure the SPS-1000 is powered off.
2. Connect an HDMI equipped display to the HDMI output connector on the SPS-1000 and power on the display.
3. Connect HDMI sources to the HDMI1/2/3/4 connectors on the SPS-1000 for both video and audio signal conversion. You can use DVI to HDMI adapters to connect DVI sources to the HDMI input connectors.
4. Connect a DVI source to the DVI connector on the SPS-1000.
5. Connect VGA sources to the VGA connectors on the SPS-1000.
6. Connect a composite source to the composite connectors on the SPS-1000.
7. Optionally connect audio from any of the HDMI, DVI and VGA sources to the 3 pin Phoenix connector provided for each input. Note: When selecting HDMI 1/2 input and selecting external audio input, the digital and analog audio output is still embedded in the HDMI signal.
8. Optionally connect the RS-232 DB9 Female connector to a PC for remote control of the SPS-1000.
9. Optionally connect an Ethernet cable to the TCP/IP port on the SPS-1000 to a Local Area Network for remote control of the SPS-1000.
10. Power on all of the signal sources connected to the SPS-1000
11. Power on the SPS-1000.

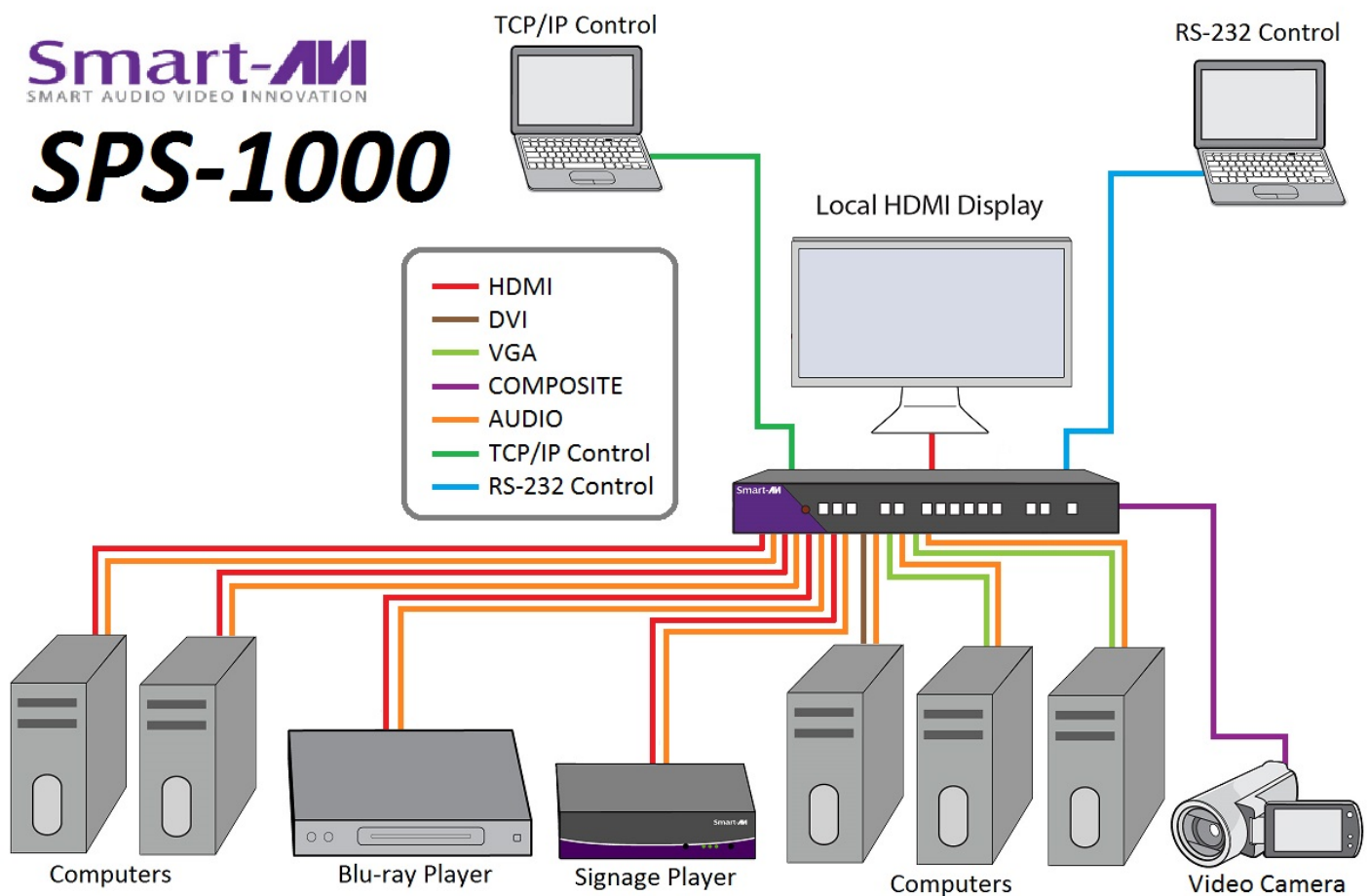


Figure 5-1

FRONT PANEL CONTROLS

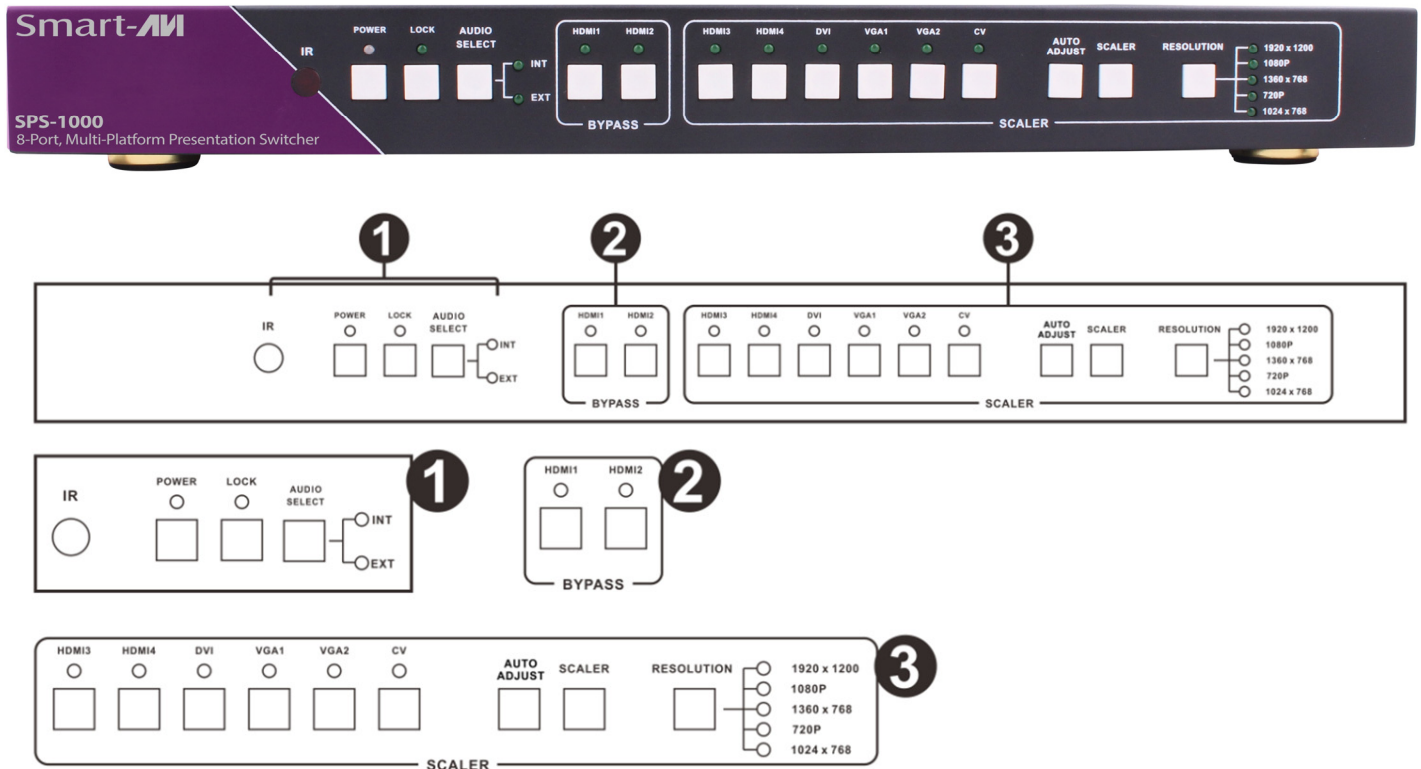


Figure 6-1

Part 1.

IR: IR Receiver window (accepts the remote control signal of this device only).

POWER: Press this button to power the device standby on/off. Press this button more than 2 seconds, the device has reached the standby mode. The LED will illuminate green when the power is on, red when it is in 'Standby' mode.

LOCK: Press this button to lock all the buttons on the panel, press again to unlock.

AUDIO SELECT: Press this button to select audio from digital (INT) or analog (EXT) when the signal is an HDMI input.

Note: DVI interface as HDMI input has the same function.

Part 2.

HDMI INPUT BYPASS: Press these buttons to switch directly to the required source. An LED will illuminate to indicate the selected input source.

Part 3.

PORT AND SCALER SELECT:

1. Source select: Press these buttons to switch directly to the required source. An LED will illuminate to indicate the selected input source.
2. Picture adjustment: Press Scaler or the auto adjust button to adjust the output picture.
Note:
 - a. The output signal source must be VGA input source.
 - b. Scaler enables the resolution button.
3. Resolution: Press the button to select different resolution output. An LED will illuminate to indicate the selected resolution.

REAR PANEL FUNCTIONS

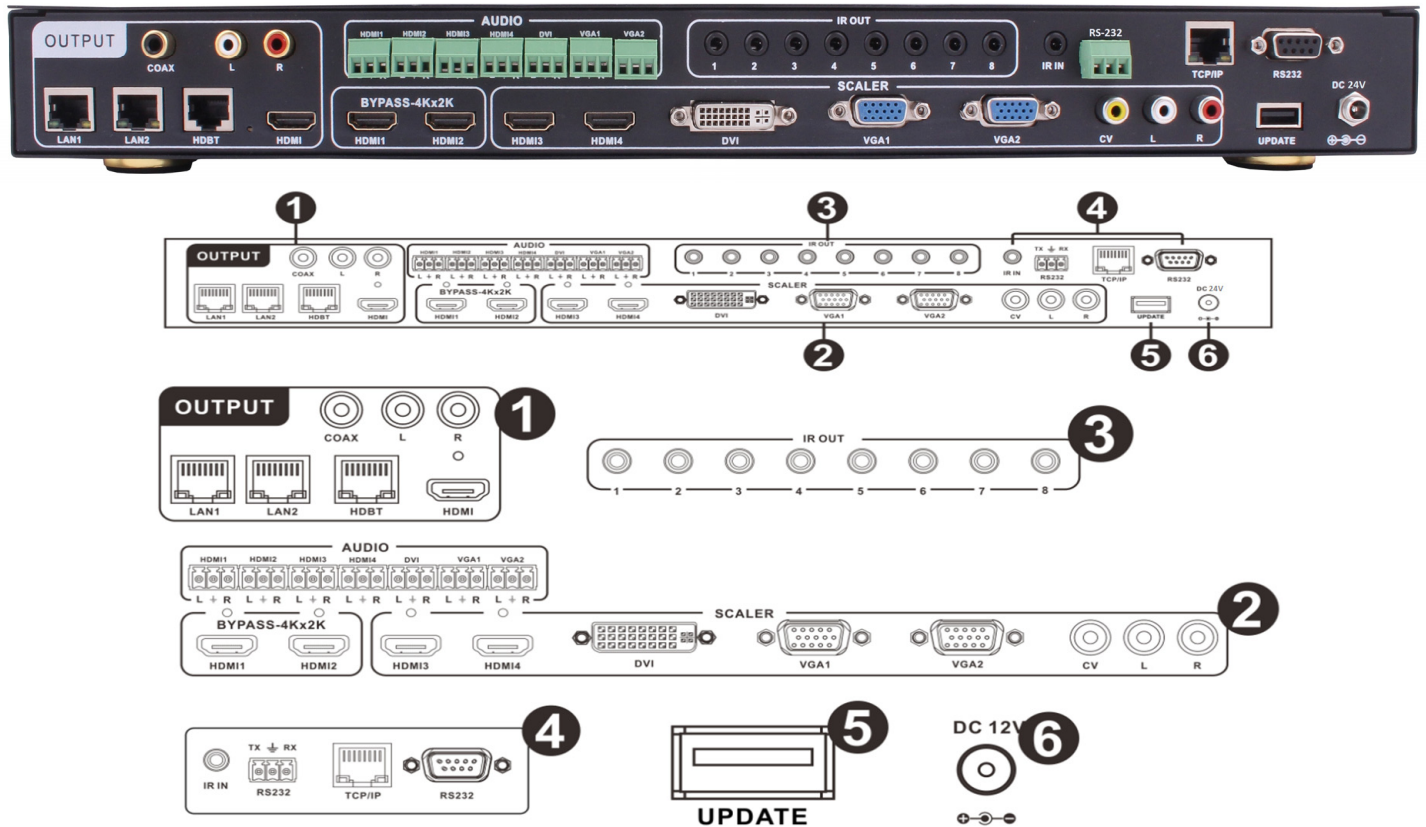


Figure 7-1

Part1: OUTPUT

The HDMI OUTPUT connect to HDMI equipped TVs or monitors and the HDBT OUTPUT connects to the SPS-RX HDBT Receiver (Optional). The coaxial and stereo output is connected to an audio amplifier. The LAN is connected to a PC or Router.

Part2: INPUT

HDMI 1/2/3/4: Connect to HDMI sources such as a DVD player or Blu-ray player for both video and audio signal conversion.

DVI: Connects to DVI sources such as a PC.

VGA 1/2: Connects to a PC/Laptop source for video signal input with a D-Sub 15pin cable or connects to a DVD player source for video signal input with a D-Sub 15pin to 3 RCA adaptor cable.

CV+L/R: Connects to a composite video source such as a video or DVD player for both video and audio signal conversion.

3 pin Phoenix connector: Connect to source's L/R output with 3 pin Phoenix connector cable for audio signal conversion.

Part 3: IR OUT—Connect with wideband IR TX.

Part 4: CONTROL

TCP/IP: This port is the link for TCP/IP controls, connect to an active Ethernet link with an RJ45 terminated cable.

RS232(DB9): Connects to a PC or control system with a D-Sub 9-pin cable for the transmission of RS-232 commands. **Note:** The RS-232 interface can control the machine.

IR IN: Connects with the supplied wideband IR Receiver.

RS232 (3 pin Phoenix connector): Connects to a PC or control system with a D-Sub 9pin to 3 pin Phoenix connector cable. **Note:** The RS-232 interface works only with the remote receiver (HDBaseT Receiver) for RS-232 communication.

Part5: UPDATE PORT—Connect a USB flash drive with the system software update in the root folder.

Part6: DC POWER INPUT—Plug the 24V/1A DC power supply into the DC24V power in connector.

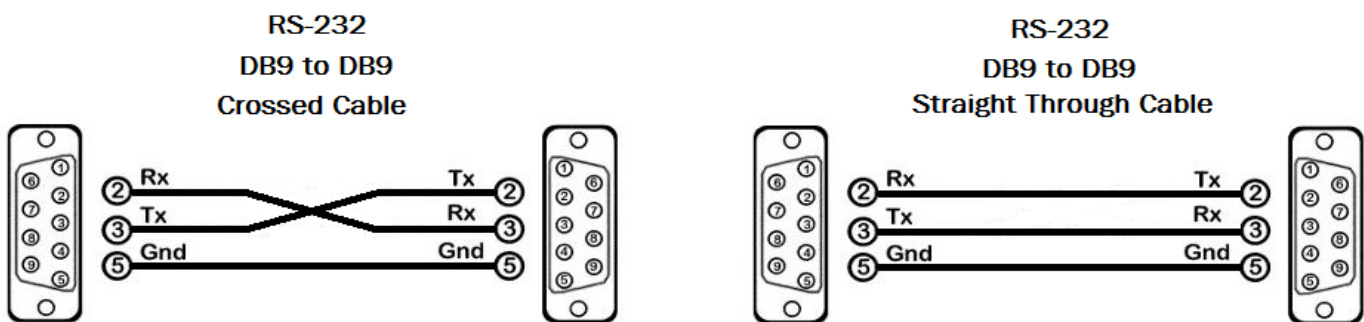
ESTABLISHING AN RS-232 CONNECTION

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. 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 8-1



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 8-2 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. In Windows 7 you need to click on "Hardware and Sound" to get to 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.

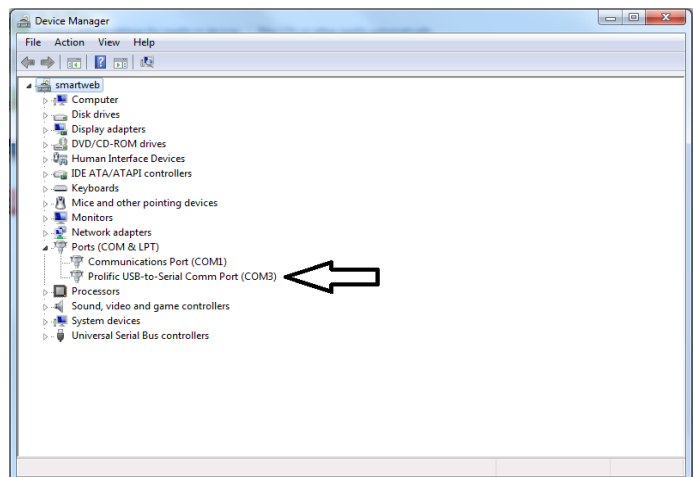


Figure 8-2

RS-232 EXTENSION

The RS-232 port lets you send and receive simple RS-232 signals between a controller and a serial device via the switcher which is connected to the RS-232 port (3 pin Phoenix connector) and outputs via CAT6/7 cable.

The example, illustrated in Figure 8-1, shows a PC or control system that is connected to the switcher via the RS-232 port (3 pin Phoenix connector). The HDBT output connector on the switcher is connected via CAT6/7 cable to an SPS-RX HDBT receiver (Optional). This HDBT receiver connects to a projector via HDMI and RS-232. The PC or control system sends RS-232 signals to control the projector, by way of the switcher and HDBT receiver.

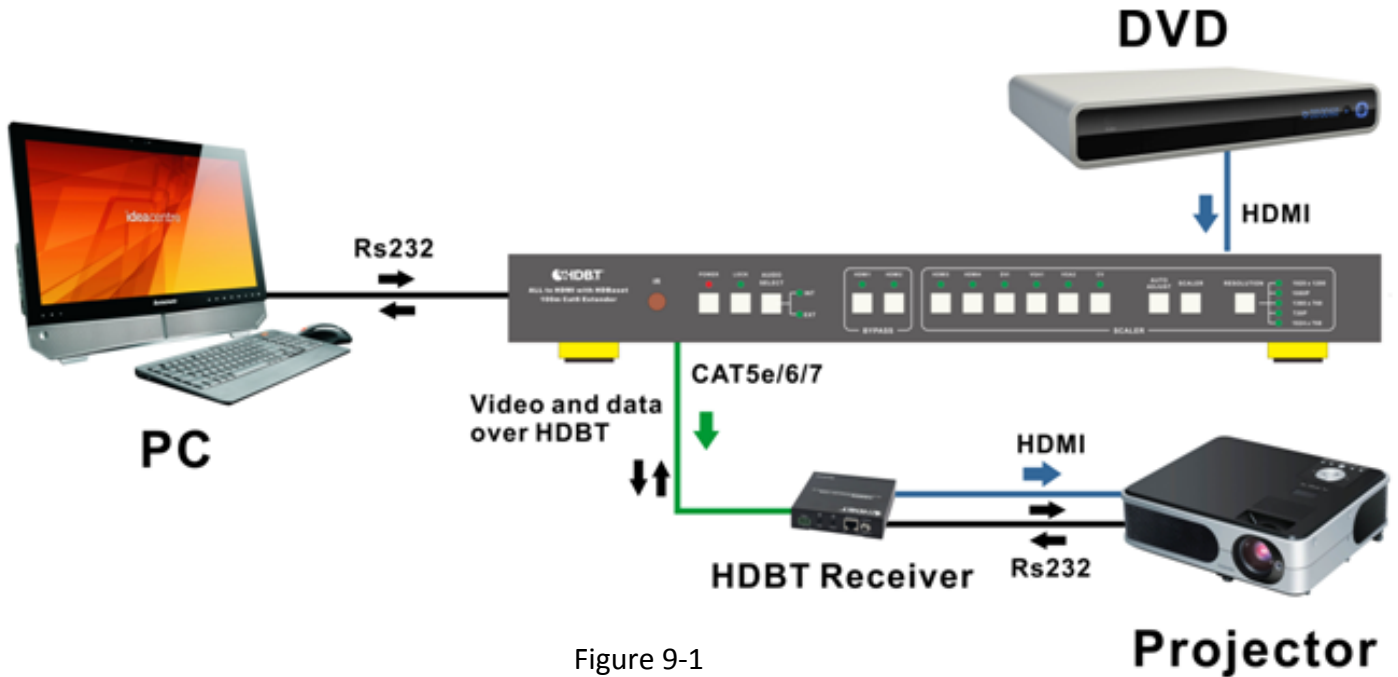


Figure 9-1

IR REMOTE CONTROL OF THE SPS-1000

1. Press this button to power on the switcher or set it to standby mode.
2. Input Selection: Press these buttons to switch to the required source.
3. Audio select: Click these buttons to select audio from digital (INT) or analog (EXT), when the signal is switch to the HDMI or DVI signal source.
4. Press Scaler or auto adjust button to adjust the output picture.
Note:
 - a. The output signal source must be VGA input source.
 - b. Scaler Enables the resolution button.
5. Resolution: Press these buttons to select different resolution output. See page 6.
6. These buttons are for function extension keys.

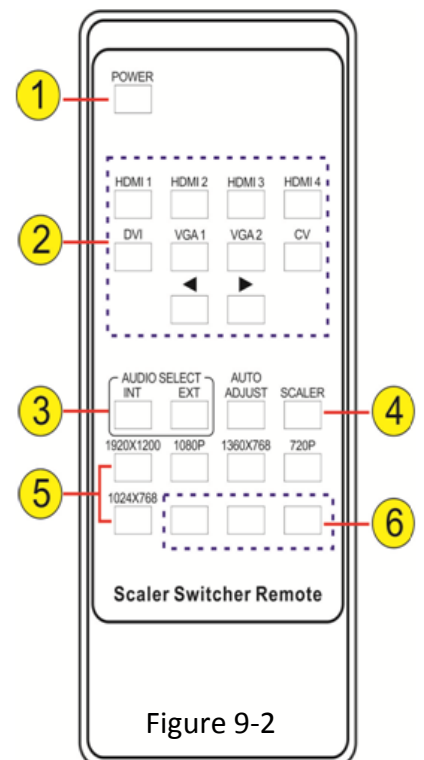


Figure 9-2

IR REMOTE CONTROL OF CONNECTED DEVICES

The IR control can realize two-way control function and the 8 IR OUT ports correspond to the 8 video inputs and switch automatically according to the selected video input.

Example, illustrated in Figure 10-1:

To control the far-end display: The IR Receiver (Rx1) is connected to the switcher IR IN port. The HDBT output connector on the switcher is connected via CAT5e/6/7 cable to an SPS-RX HDBT receiver (Optional). The HDBT receiver is connected to a TV via HDMI, and the IR Transmitter (Tx2) is connected to the HDBT receiver IR OUT port. To control this machine (switcher) or far-end display device from local by using the corresponding remote controller.

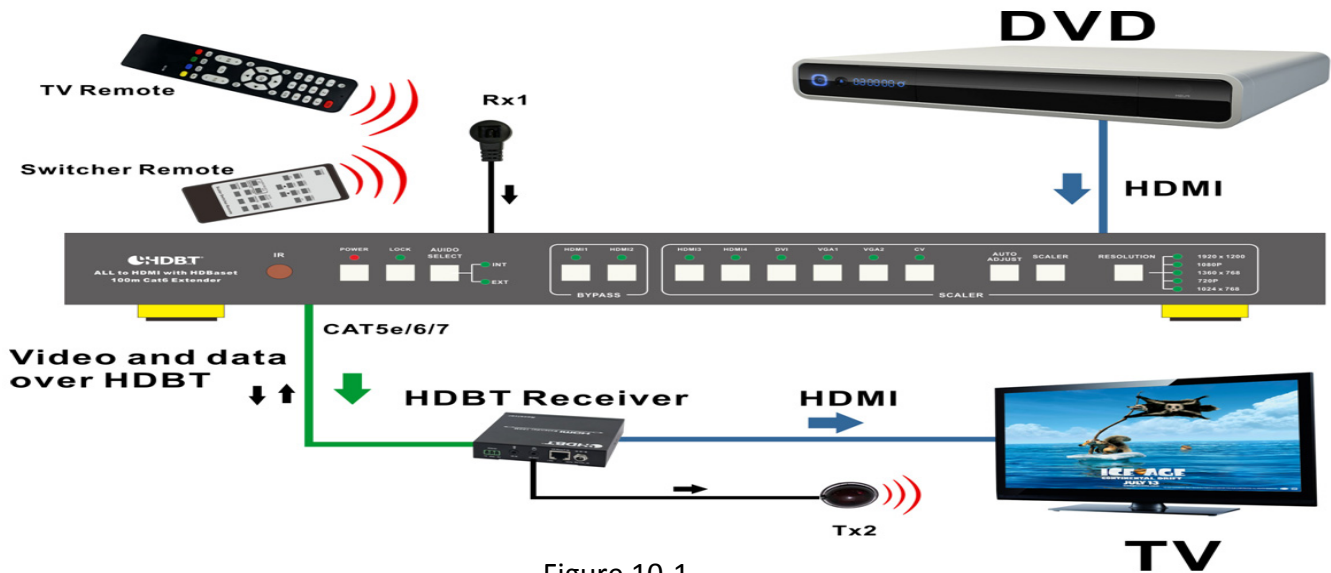


Figure 10-1

Example, illustrated in Figure 10-2:

Control local device (DVD, Switcher, etc) from remote: The IR Receiver (Rx2) is connected to the HDBT receiver IR IN port. The HDBT output connector on the switcher is connected via CAT6/7 cable to an SPS-RX HDBT receiver (Optional). The IR Transmitter (Tx1) is connected to the switcher IR OUT port. The IR remote can be used to control this machine (switcher) or local source device from remote.

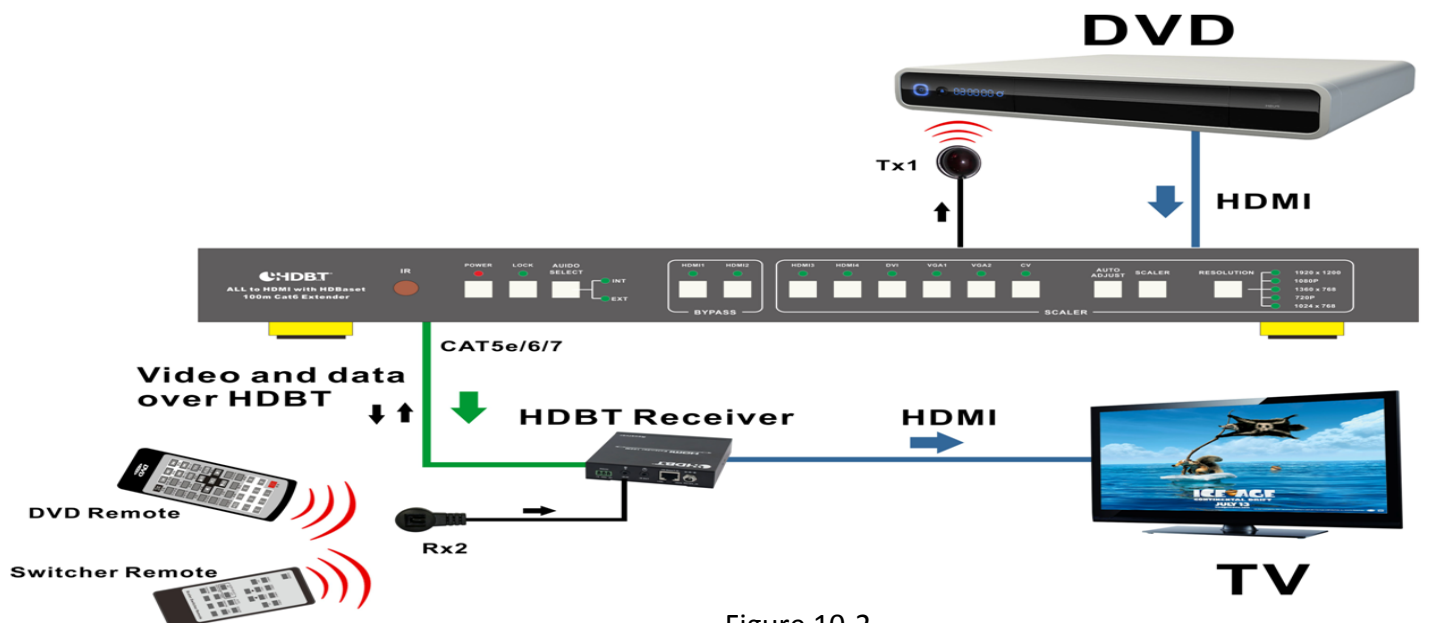


Figure 10-2

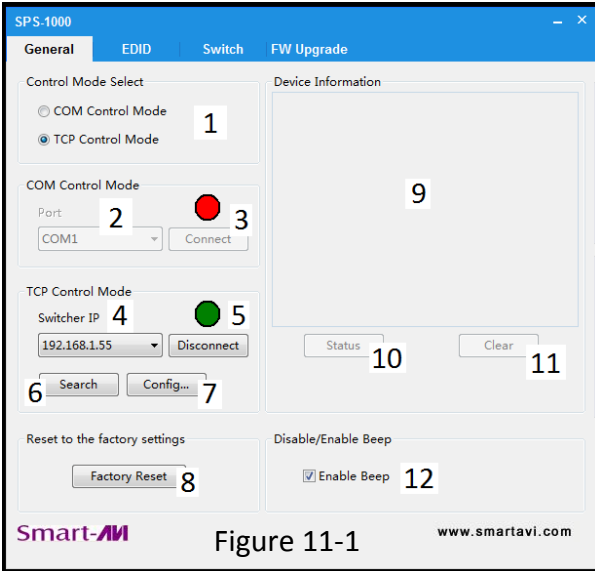
PC CONTROLLER SOFTWARE USER GUIDE

Installation

The Switcher controller software is a stand-alone software. Just extract the software to the control PC that will connect to the SPS-1000 by RS232 COM port or TCP/IP to complete installation.

Preparation

- Connect the control PC and SPS-1000 by RS232 cable or TCP/IP (local area network)
- Power-up SPS-1000
- Double click the SPS-1000 controller software icon to run it



1. Select RS232 (COM) or TCP mode
 2. Select RS232 COM port
 3. Click to connect or disconnect the PC and the SPS-1000
 4. Select the SPS-1000 IP
 5. Connect to SPS-1000 IP
 6. Search for the SPS-1000 IP
 7. Configure the SPS-1000 IP and MAC
 8. Click to reset to the factory default settings
 9. Device information display area
 10. Click to refresh device status
 11. Click to clear device information
 12. Enable or disable Beep
- Note: Functions 9,10 and 11 are not enabled.**

Figure 11-1

Available EDID Settings:

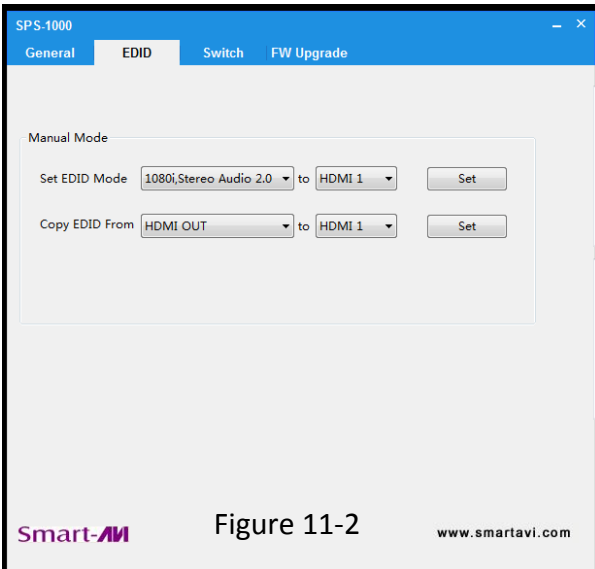


Figure 11-2

1080i,Stereo Audio 2.0
1080i,Dolby/DTS 5.1
1080i,HD Audio 7.1
1080p,Stereo Audio 2.0
1080p,Dolby/DTS 5.1
1080p,HD Audio 7.1
3D,Stereo Audio 2.0
3D,Dolby/DTS 5.1
3D,HD Audio 7.1
4K2K,Stereo Audio 2.0
4K2K,Dolby/DTS 5.1
4K2K,HD Audio 7.1
DVI 1024x768
DVI 1920x1080
DVI 1920x1200
Default EDID

Table 11-3

PC CONTROLLER SOFTWARE USER GUIDE (Continued)

Switching between Inputs:

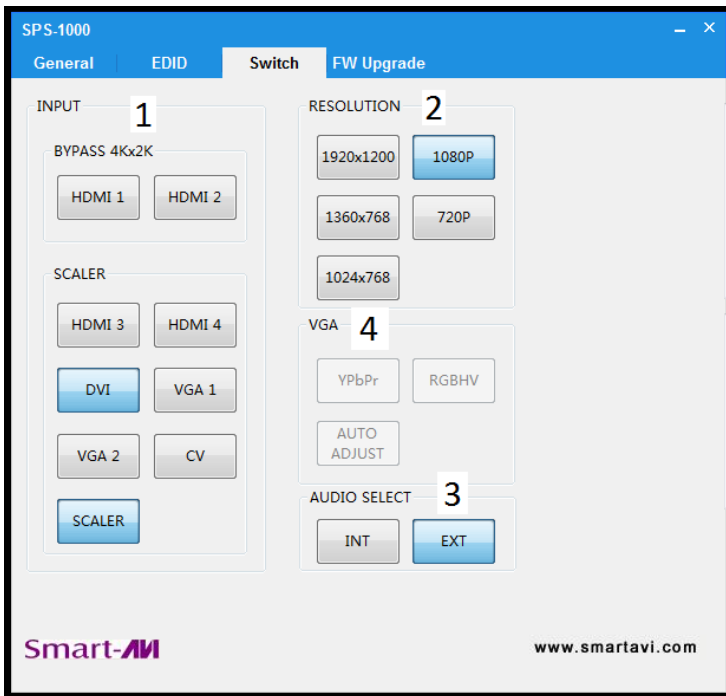


Figure 12-1

1. Input Selection: Click these buttons to switch to the required source.
2. Resolution select: Click these buttons to select different resolution output.
3. Audio select: Click these buttons to select audio from digital (INT) or analog (EXT), when the signal is switched to the HDMI or DVI signal source.
4. When the signal is switched to the VGA1 or VGA2 of port, these buttons can be used.
 - A. AUTO ADJUST: Automatically adjust the output picture.
 - B. RGBHV: Click this button to set VGA1 or VGA2 port for RGBHV signal source input.
 - C. YPbPr: Click this button to set VGA1 or VGA2 port for YPbPr signal source input.

SPS-RX HDBT RECEIVER (Optional)

HDMI OUT: HDMI output port. This is where you connect the HDTV or monitor with an HDMI cable .

ETHERNET: This slot provides an Ethernet connection from transmitter or to transmitter.

RS232: 3-Pin Phoenix jack provides a 2 way Serial port control signal.

DC IN: Plug the 24V DC power adapter into the unit.

IR RX: Chanel 2 IR Receiver. Connect with Wideband IR Rx.

IR TX: Chanel 1 IR Transmitter. Connect with Wideband IR Tx.

HDBaseT IN: Standard HDBaseT signal input port. Connect HDBaseT transmitter with a Cat5e/6/7 cable.

LINK LED: The state of the LED indicates the connection status:

On: The connection between transmitter and receiver is good.

Flashing: The connection between transmitter and receiver is poor.

Dark: There is no connection between transmitter and receiver.

DATA LED: The state of this LED indicates the data status:

On: A HDMI signal with HDCP is connected.

Flashing: A HDMI signal without HDCP is connected.

Dark: There is no HDMI signal connected.



SPS-RX	SPECIFICATIONS
Dimensions	4"W x 1"H x 4"D
Weight	0.8 lbs.
Input	(1) RJ-45 HDBaseT in, (1) IR 3.5mm
Output	(1) HDMI, (1) RJ-45 Ethernet (LAN), (1) IR 3.5mm, (1) RS-232 3-Pin Phoenix Connector
Operating Temp.	32 °F to 104 °F (0 °C to 40 °C)
Storage Temp.	-4 °F to 140 °F (-20 °C to 60 °C)
Relative Humidity	20% to 90% (no condensation)
Power	PS24VDC1A or POE (Power Over Ethernet)

SPS-RX HDBT RECEIVER (Continued)

Connecting the SPS-RX

1. Turn off all devices.
2. Connect signal source devices to the SPS-1000 switcher's appropriate input ports (HDMI, DVI, VGA, etc...).
3. Connect SPS-1000 to local display via HDMI AND/OR SPS-RX with RJ-45 CAT5 cable.
OPTIONAL: Connect SPS-1000 to stereo audio output device via 3.5mm audio jack.
OPTIONAL: Connect SPS-1000 to computer via RS-232 cable for additional command support.
4. Power on signal source devices.
5. Power on display (remote or local).
6. Power on SPS-1000.

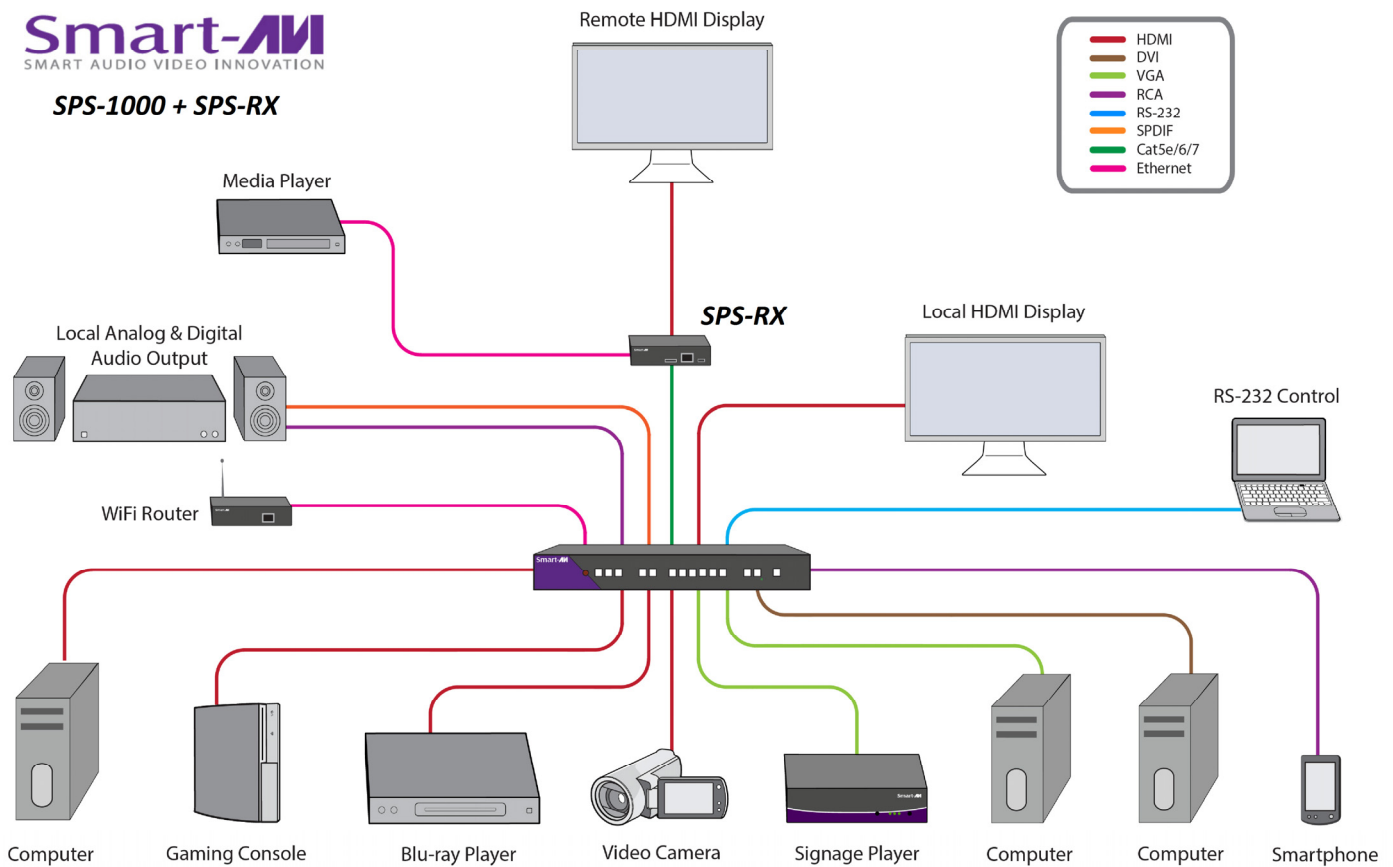


Figure 14-1

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.

Smart-AVI

SMART AUDIO VIDEO INNOVATION

NOTICE

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