

HDR-8x8-XT

User Manual

4K Ultra-HD 8X8 HDBaseT HDMI Matrix with POE



Distribute 8 4K HDMI sources to 8 local monitors and 8 remote displays via HDBaseT (CAT5e/6/7) with IR, RS-232, and TCP/IP control support

Smart-AMV
SMART AUDIO VIDEO INNOVATION

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WHAT'S IN THE BOX?

PART NO.	QTY	DESCRIPTION
HDR-8x8-XTS	1	4K-Ready 8x8 HDMI Matrix Switch with CAT5/6/7 HDBaseT
CCPWR06	1	6' Power Plug Cable
RMHDR8X8	1	IR Remote Control
	1	Quick Start Guide

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



Figure 2-1

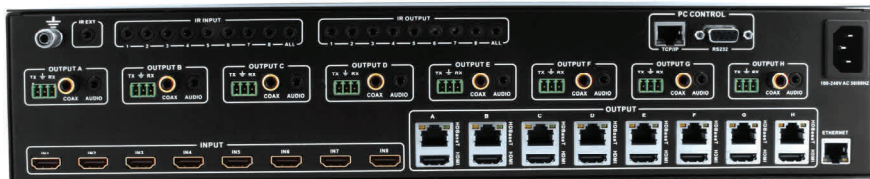


Figure 2-2

INTRODUCTION

The HDR-8x8-XT with simultaneous CAT5e/6/7 and HDMI outputs connects eight HDMI input sources to sixteen displays. This matrix features eight mirrored HDMI outputs, providing 8 HDMI output ports and 8 CAT-Cable output ports simultaneously. The HDR-8x8-XT supports the transmission of video (resolutions up to 1080p Full HD and 4Kx2K@30Hz) and supports high resolution digital audio formats such as LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio. Connect a HDBaseT Receiver to each of the CAT-Cable outputs to extend the HDMI signal up to 328ft/100m (100m Version) or 230ft/70m (70m version) for multi-room connectivity. The HDR-8x8-XT works with Blu-Ray players, Set-Top boxes, Home Theater PCs, and game consoles that connect to an HDMI display. Any source is accessible at all times by any display through the supplied IR Remote Control, RS-232, TCP/IP, or by using the selection buttons on the front panel. This device supports High Definition Audio, and 3D signal compatibility.

FEATURES

- HDMI input supports: HDMI2.0, HDCP 2.2 and DVI1.0 compliant
- Supports HDMI 3D pass-through
- Supports resolutions from VGA~WUXGA and HD resolutions from 480i~1080p~4Kx2K@30 dependent upon the EDID settings
- Supports transmission distances up to 328ft/100m (100m Version) or 230ft/70m(70m version) through CAT5e/6/7 cable
- Supports Power Over Ethernet (POE) function
- Supports simultaneous HDMI and CAT5e/6/7 outputs
- Supports wideband IR(30-60Khz) matrix system, IR transport
- Channels can be forward or backward. And supports GLOBAL IR input and output.
- Supports RS-232, remote control, front panel buttons control and TCP/IP Control
- Supports smart EDID management
- Supports Digital Audio and stereo audio outputs
- Support bi-directional IR & RS232 control
- Supports HDBaseT LAN Serving function
- Supports LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD
- Master Audio transmission

APPLICATIONS

- Sports Arenas
- Concert Halls
- Cinemas & Multiplex Theaters
- Convention Centers
- Hotel Lobbies
- Transportation Hubs (Airports, Train Stations)

TECHNICAL SPECIFICATIONS

VIDEO and AUDIO	
Format	HDMI 1.4
Video Bandwidth	297MHz[10.2Gbps]
Input Resolution	Up to 4K (3840x2160 @ 30Hz)
Output Resolution	Up to 4K (3840x2160 @ 30Hz)
HDMI Connector	Type A 19 pin female
RJ-45 Connector	WE/SS 8P8C
Audio Connectors	3.5mm, Coaxial
CONTROL	
Front Panel	Front panel buttons
IR	Infrared Remote Control 3.5mm connector: (TX and RX) IR Receiver/IR Blaster
RS-232	RS-232 serial commands
TCP/IP Control	via Ethernet-connected computer
OTHER	
Input Ports	(8) HDMI, (10) IR Receiver, (1) RS-232, (1) RJ-45(Control), (8) RS-232
Output Ports	(8) CAT5e/6/7, (9) IR Blaster, (8) HDMI (8) Audio, (8) Digital audio
Power Supply	Internal 100-240 VAC 50/60Hz
Max Consumption	100 W
Dimensions	17.5" W x 14.75" D x 4" H
Weight	14.65 lbs
Approvals	UL, CE, ROHS Compliant
Operating Temp.	32 to +104 °F (0 to 40 °C)
Storage Temp.	-4 to +140 °F (-20 to 60 °C)
Humidity	Up to 90% RH (non-condensing)

FRONT PANEL FUNCTIONS

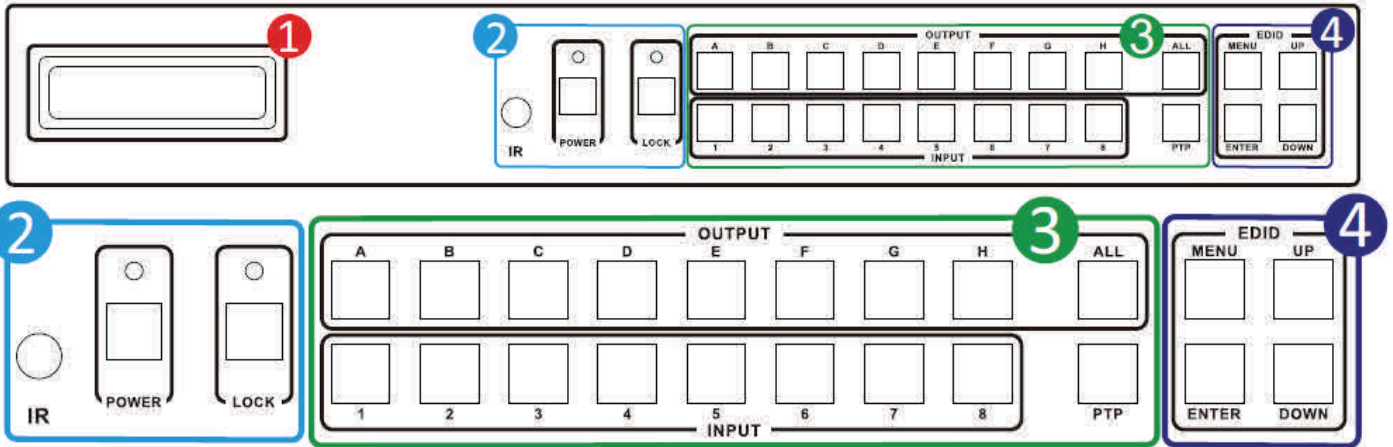


Figure 5-1

- 1. LCM:** Displays all information regarding individual input settings/output settings and EDID management
- 2. IR:** IR Receiver window (accepts only the HDR 8x8 -XT remote control signal).
POWER: Press this button to power the device on/off. 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.
- 3. OUTPUT/INPUT:** To assign an output to an input using the front panel buttons, press the desired output button followed corresponding input.
 Example: Press OUTPUT ALL, then INPUT 1 and OUTPUTs A/B/C/D/E/F/G/H will be set to INPUT 1. Press PTP, then OUTPUTs A/B/C/D/E/F/G/H will "point to point" map to INPUTs 1/2/3/4/5/6/7/8.
- 4. EDID:** Smart EDID management, the LCM will display the EDID operation.
 Press the MENU button will enter the EDID management window, press UP or DOWN button to select the needed EDID setting, press ENTER button to select the download input source. It can easy download any EDID mode to any input source.

EDID Mode	EDID Description	EDID Mode	EDID Description
1	1080i, 2CH AUDIO	13	4Kx2K@60Hz,2CH AUDIO
2	1080i, DOLBY/DTS 5.1	14	4Kx2K@ 60Hz,DOLBY/DTS 5.1
3	1080i, HD AUDIO 7.1	15	4Kx2K@60Hz,HD AUDIO 7.1
4	1080p, 2CH AUDIO	16	Copy from HDMI OUTPUT A
5	1080p, DOLBY/DTS 5.1	17	Copy from HDMI OUTPUT B
6	1080p, HD AUDIO 7.1	18	Copy from HDMI OUTPUT C
7	3D,1080p, 2CH AUDIO	19	Copy from HDMI OUTPUT D
8	3D, 1080p,DOLBY/DTS 5.1	20	Copy from HDMI OUTPUT A
9	3D,1080p, HD AUDIO 7.1	21	Copy from HDMI OUTPUT B
10	4Kx2K@30Hz,2CH AUDIO	22	Copy from HDMI OUTPUT C
11	4Kx2K@30Hz,DOLBY/DTS 5.1	23	Copy from HDMI OUTPUT D
12	4Kx2K@30Hz,HD AUDIO 7.1		

Table 5-2 EDID MODES

EDID

EDID. What is it and what is it used for?

Under normal circumstances, a source device (digital and analog) will require information about a connected device/display to assess what resolutions and features it can produce. Using this information from the display, the source can then cater its output to send only resolutions and features that are compatible with the attached device/display. This information is called EDID (Extended Display Information Data). A source device can only accept and read one EDID from a connected device/display. Likewise, the source can only output one resolution for use by a connected device/display.

Why is EDID so important with the HDR 8x8 XT ?

The HDR 8x8-XT is a complex piece of technology that replicates and switches between multiple inputs and outputs. Each connected source device will require one EDID to read. EDID management is carefully handled by HDR 8x8 XT to provide a single EDID for each source to read.

What options do I have to manage the EDID in the HDR 8x8 XT ?

Each source device can only output one video/audio signal type (including resolutions and timings). When multiple devices/displays are used, such as with the HDR 8x8 XT, using devices/displays that have compatible resolutions/features will reduce EDID errors. This will ensure that the single video/audio signal produced by the source device is accepted by all of the connected output devices/displays. The user has the option, through the EDID management window, to choose how the unit will manage the EDID from multiple HDMI devices/displays. The HDR 8x8 XT has multiple EDID management modes that will control how the EDID information from multiple devices/displays are combined, ignored, and routed.

REAR PANEL

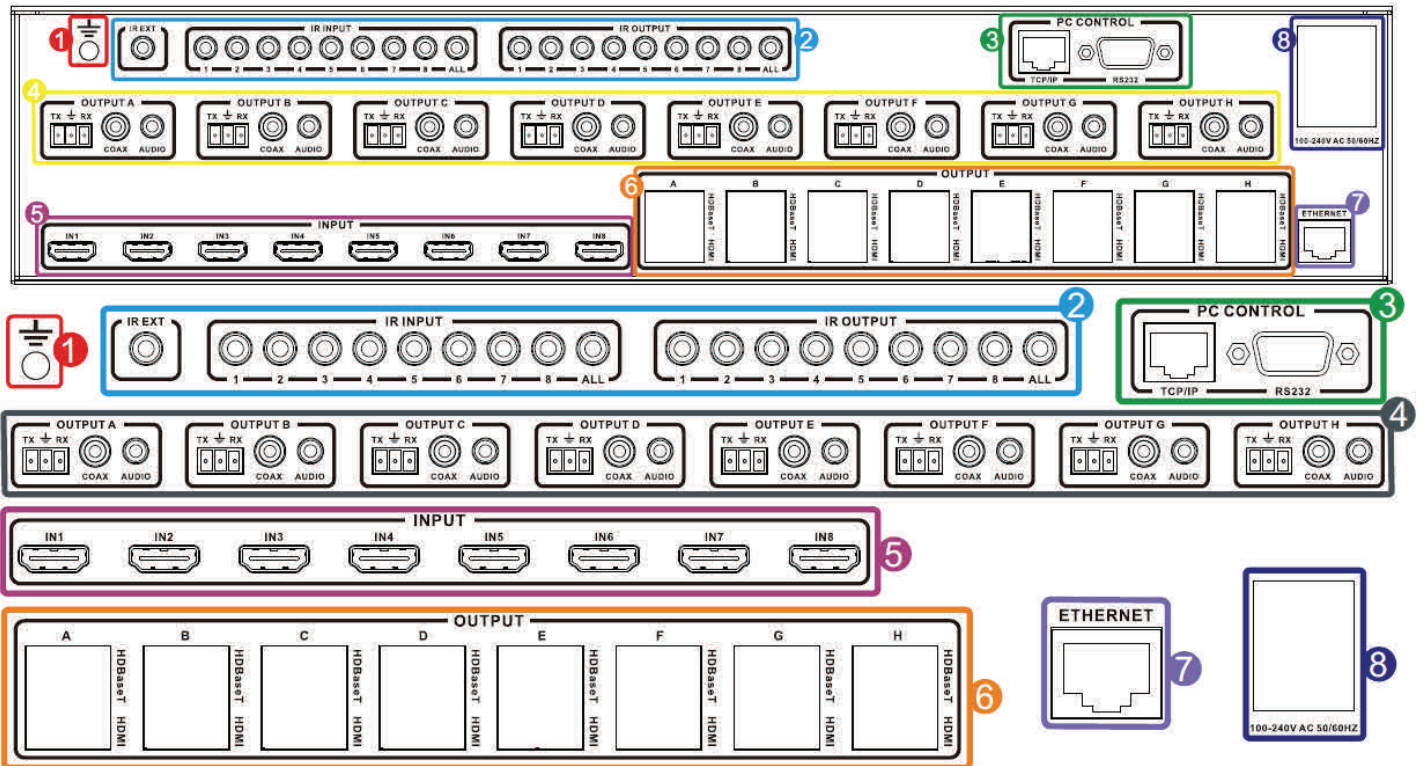


Figure 7-1

1. **GND:** Connect the Housing to ground.

2. IR Matrix

IR EXT: if the panel sensor is obstructed or the unit is installed in a closed area out of infrared line of sight, the IR RX receiver included can be inserted into the IR EXT port at the rear to extend the IR sensor range and enable local control of the matrix.

IR IN/OUT: Super IR control system interface. For further details, please refer to the IR control system section starting on page 9.

3. PC CONTROL

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

RS232: Connect to a PC or control system with D-Sub 9-pin cable for the transmission of RS-232 commands.

4. **AUDIO OUTPUT:** The coaxial and analog audio output connects to the audio amplifier. The TX and RX for RS232 communication with the HDBaseT Receiver TX and RX.

5. **HDMI INPUT:** Connect to the HDMI input source devices such as a DVD player or a Set-top Box with HDMI cable.

6. **VIDEO OUTPUT:** The HDMI OUTPUT connect to HDMI equipped TVs or monitors and the HDBaseT OUTPUT connect to the HDBaseT Receiver.

7. **Ethernet:** This slot provides Internet connectivity to the devices connected to the 8 RJ45 ports shown in Figure 7-1, section 6.

8. **AC POWER INPUT:** Connect to AC power with AC power cable.

REMOTE CONTROL

- 1. Power on /Standby:** Press this button for power on the matrix or set it to standby mode.
- 2. Input port selection area:** Press these buttons to select input 1-8. Press forward/backward button will cycle from input 1-8.
- 3. Output port selection area:** Press these buttons to select output A-H, including ALL.

How to operate the Matrix Remote?

1. Power on and standby

Q. How to power on and standby?

A. Press Power on /Standby button and wait a while.

2. How to select Output and Input Port?

Q. OUTPUT-X select INPUT-Y:

A. Press OUTPUT-X (X means 1 to 8 of outputs, including ALL) Press INPUT-Y (Y means 1 to 8 of inputs)

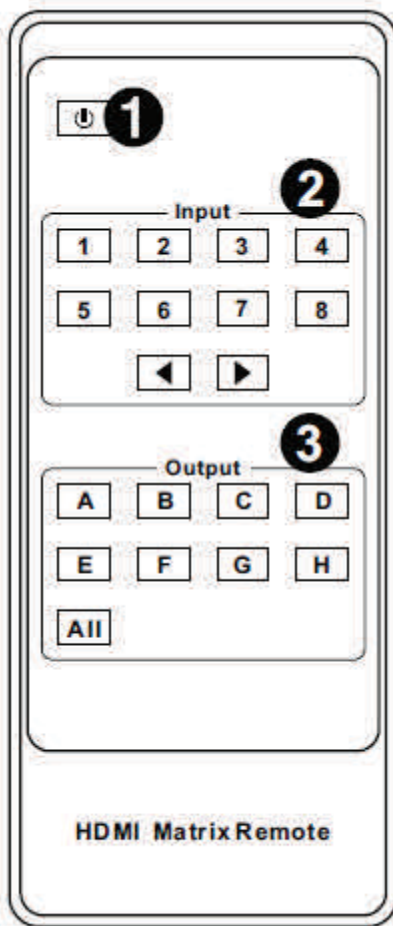


Figure 8-1

IR CONTROL SYSTEM

(IR Call-back of Matrix and Source Devices)

The matrix is not only a switcher and extender of multiple HDMI signals to multiple HDMI receivers located remotely, it also passes IR control signals through the IR call-back system to the matrix and HDMI sources for full, independent control of all connected inputs from output locations.

Two-way IR Call-back Between matrix, Sources and Displays from Multiple Locations

A key feature on the matrix is discrete IR control of the matrix, sources and displays from any location – so inputs at the matrix end can be controlled at a display location and displays can be controlled at the matrix location. This is accomplished by placing a series of IR Emitters on devices to control and IR Receivers at all locations you wish to control from to enable the IR signal to travel both ways via the single Cat5e/6/7 cable.

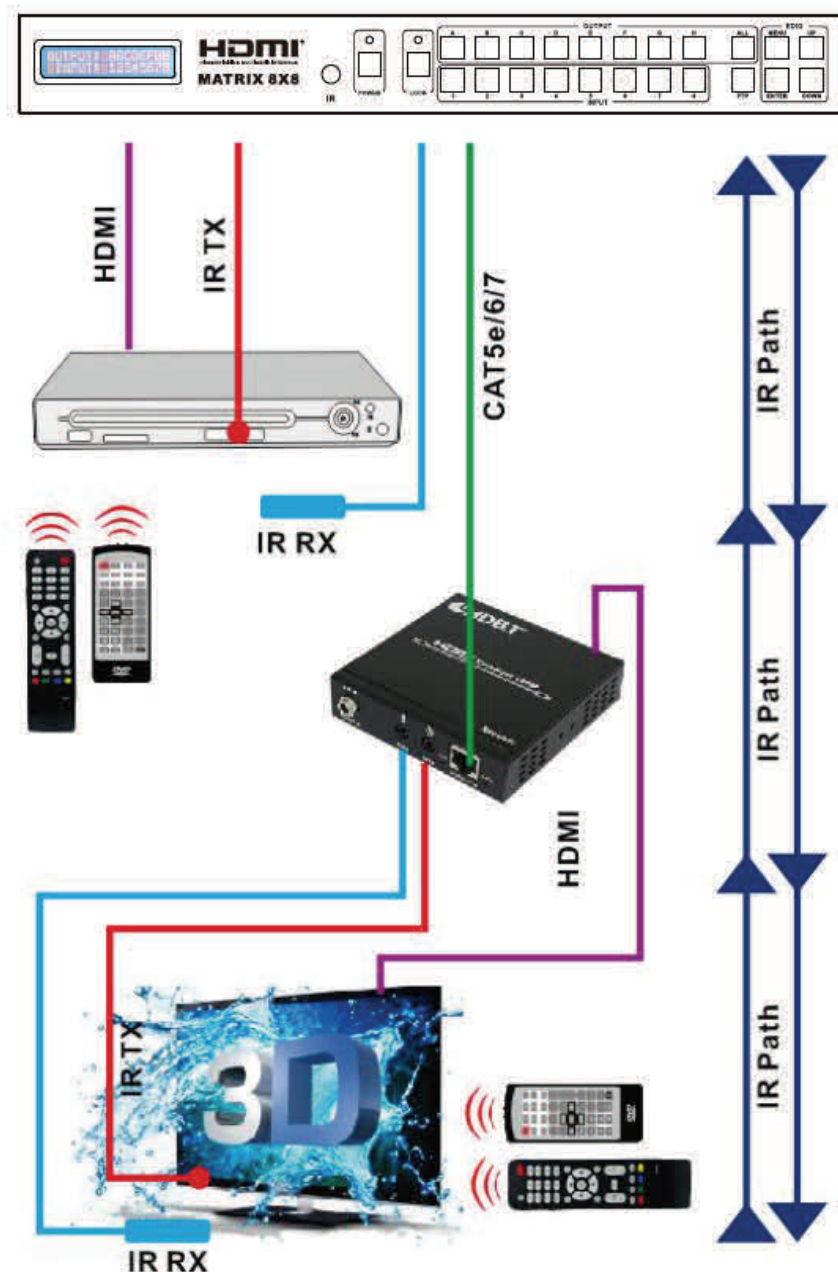


Figure 9-1

IR CONTROL SYSTEM (Continued)



Figure 10-1

At Matrix end: Insert the 3.5mm jacks of the IR TX Emitters included with the unit into the IR TX Emitter ports at the rear of the matrix according to input. The IR signal is added to the HDMI of the input device so, for example, if the user is watching Blu-ray on input 1, the IR signal will be directed through the IR TX1 socket to control the device.

As each IR TX port is allocated to an individual HDMI input port, if the user is unable to establish IR control of the device, care should be taken to check firstly, that the IR emitter and HDMI input ports match (Input 1-TX1, Input2-TX2 etc.) with plugs secured in correct ports, and secondly, that the IR TX emitter sensors are firmly attached directly to the front of inputs and covering infrared sensor windows of the source devices. Some later adjustment may be needed to the location of the sensor to achieve the best performance results - sometimes moving the sensor to different areas on the source can improve IR performance.

NOTE: Infrared receiving areas of devices can be located by shining a flashlight onto the front of the device – the sensor should be able to be seen through the plastic as a small, round object inside. Insert 3.5mm jacks of IR RX receivers into RX ports, making sure the receivers themselves are placed in clear view to receive an infrared signal from the remote handset used to control the display outputs.

At display end: Insert the IR RX Receiver jack into the IR RX port of the display receiver balun, with the receivers themselves placed in clear view on or near the displays to receive an infrared signal from the remote handset used to control inputs. Insert the IR TX Emitter jack into the IR TX port of the display receiver balun, ensuring that the emitter sensor is securely attached to infrared sensor window of the display. Follow the same connection and positioning for all baluns/displays connected to the matrix. If all IR TX Emitters and IR RX Receivers are positioned and connected correctly with sources, displays and display receivers fully powered and the matrix set to IR call-back enabled and IR TX Switch mode activated, two-way IR will now be possible.

Note: Misplaced or poorly secured IR Emitters and Receivers may result in intermittent IR control signals passed to and from the matrix. Check your placement and adjust if necessary.

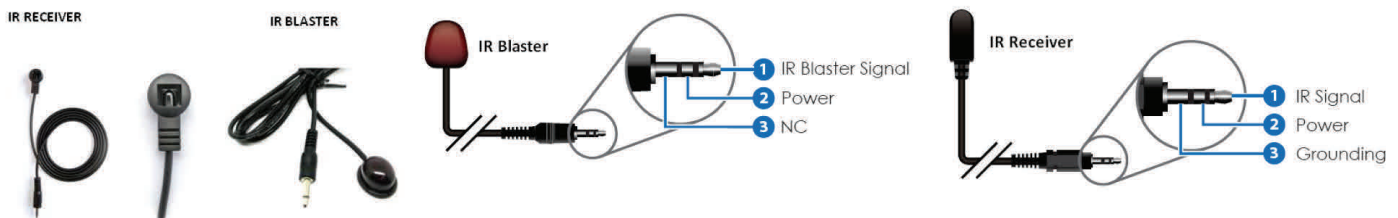


Figure 10-2

HDBaseT RECEIVER

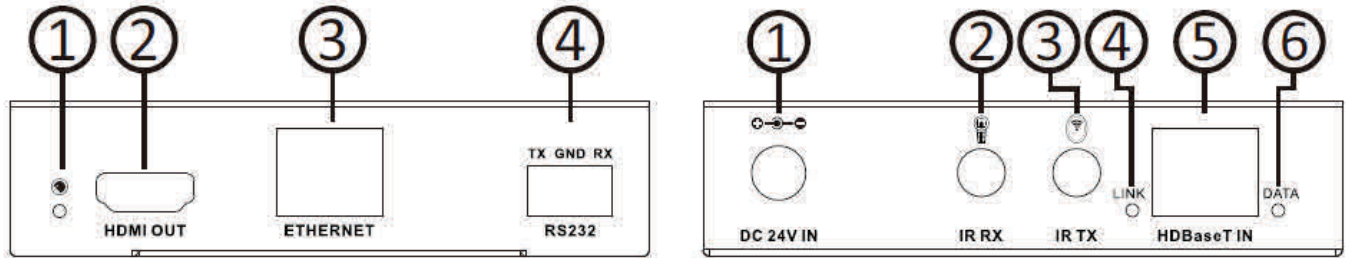


Figure 11-1

1. **OUTPUT LED:** The output status indicating lamp. This red LED illuminates when the TV plugs in with HDMI cable.
2. **HDMI OUT:** HDMI output port. This slot is where you connect the HDTV or monitor with HDMI cable.
3. **ETHERNET:** This slot provides Internet signal from transmitter or to transmitter.
4. **RS232:** Phoenix jack provides Serial port control signal from transmitter or to transmitter.
5. **DC IN:** Plug the 24V DC power supply into the unit.
6. **IR RX:** Chanel 2 IR Receiver. Connect with Wideband IR Rx.
7. **IR TX:** Chanel 1 IR Transmitter. Connect with Wideband IR Tx.
8. **LINK LED:** The connection status indicating lamp.
 - ✖Illuminate: The Transmitter and Receiver are in good connections
 - ✖Flashing: The Transmitter and Receiver are in poor connections
 - ✖Dark: The Transmitter and Receiver are in no connections
9. **HDBaseT IN:** Standard HDBaseT signal input port. Connect HDBaseT transmitter with a UTP cable following the standard of IEEE-568A or IEEE-568B.
10. **DATA LED:** The data status indicating lamp.
 - ✖Illuminate: The HDMI signal with HDCP.
 - ✖Flashing: The HDMI signal without HDCP.
 - ✖Dark: No HDMI signal.

HARDWARE INSTALLATION

1. Turn the power off on the HDR-8X8-XT
2. Connect up to 8 sources such as a Blu-Ray Player, game console, A/V Receiver, Cable or Satellite Receiver, etc. to the HDMI inputs on the unit. Do not hot plug! Insert and extract cables carefully with the power switch off. Connecting and disconnecting while the unit is powered can result in damage to circuitry.
3. Connect the output HDBaseT ports and/or HDMI output ports, starting with output 1, to the HDBaseT Receiver display receivers (sold separately) (using well terminated or pre-terminated Cat5e/6/7 cables no longer than 328 ft)
4. If utilizing UTP, connect the output HDMI ports of the HDBaseT Receiver display receivers (sold separately) to high-definition displays such as an HDTV or HD projector that use HDMI inputs. Note that high-speed HDMI cables are recommended for the distances that are required for each connection.
5. Plug in IR transmitters to the back of the Matrix Selector Switcher unit (IR TX), the transmitters are labeled IR TX, place in front of the IR receiver of the source, ensure that each emitter is placed in front of the IR receiver eye. Use double-sided adhesive tape to secure them.
6. Plug in IR receivers to the port of the HDBaseT Receiver display receivers (sold separately), the receivers are labeled IR RX, use double-sided adhesive tape to stick emitters at each display at a desired place that will receive a remote signal.
7. For power, plug in the source first, followed by the HDR-8X8-XT Matrix (power supply included), followed by the display receivers, followed by each output connected.
8. Power on each device in the same sequence.

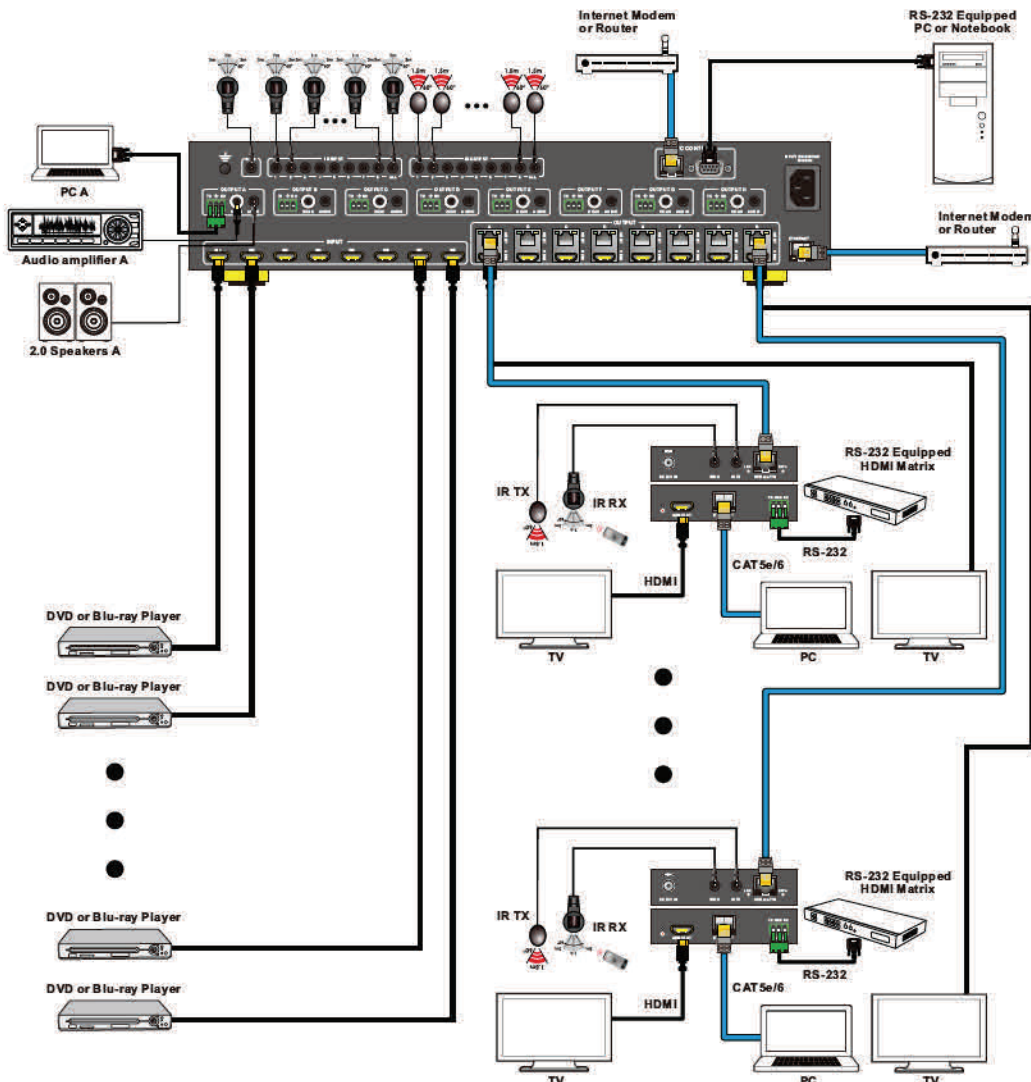


Figure 12-1

POWER OVER ETHERNET (POE)

This system can run with only the HDR-8X8-XT powered, RXs do not need to be powered.

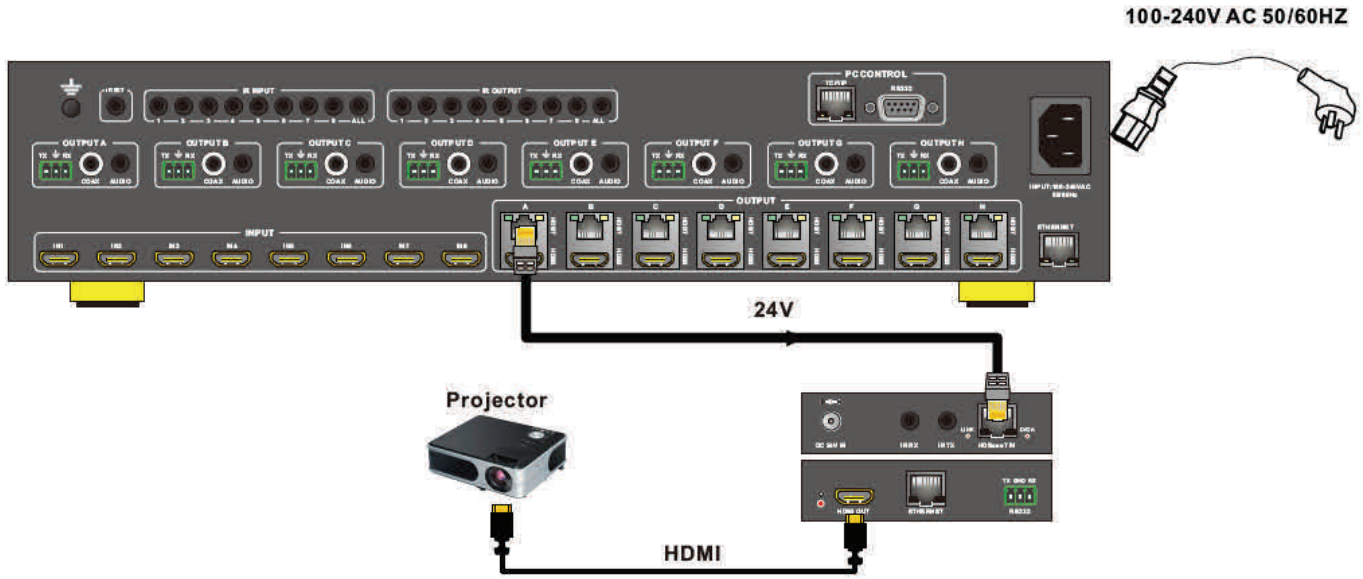


Figure 13-1

RS-232 CONTROL

Supports Bidirectional RS232 control functions. This system provides 8 channels of RS232 pass through functions. Connected equipment can be controlled through these channels. For example, the PC or control system sends RS-232 signals to control a projector.

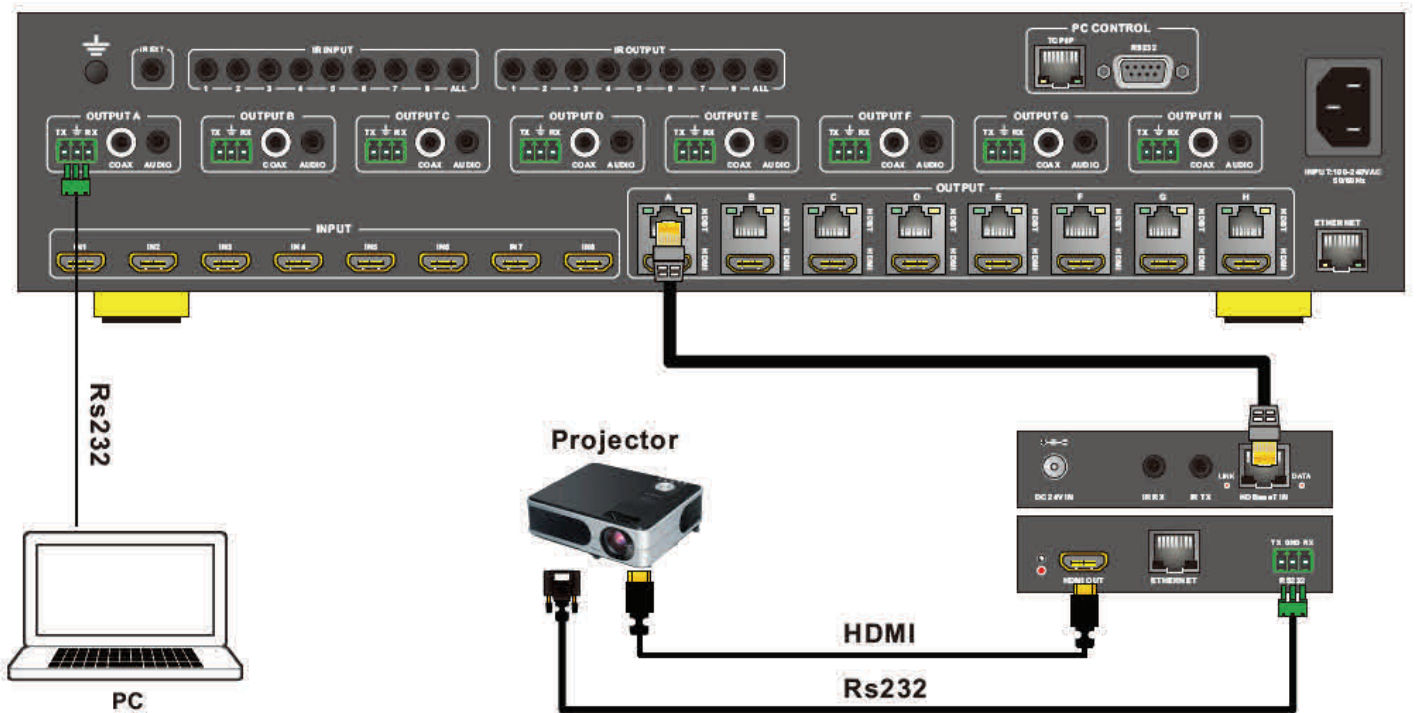


Figure 13-2

GLOBAL IR CONTROL

Use the IR All input port to control all TVs at the same time.

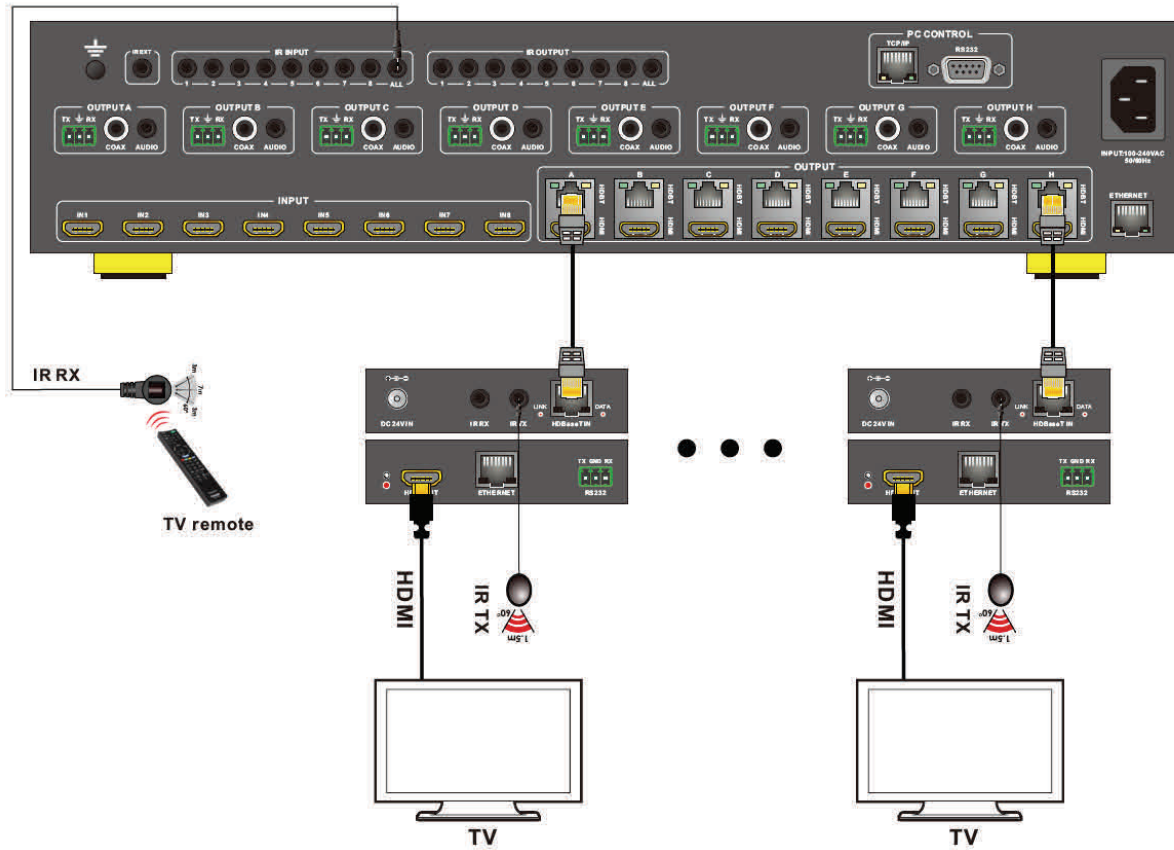


Figure 14-1

The IR Blaster (IR TX) connect to the IR All output port, At the far end can use DVD Remote control DVD, but not at the same time.

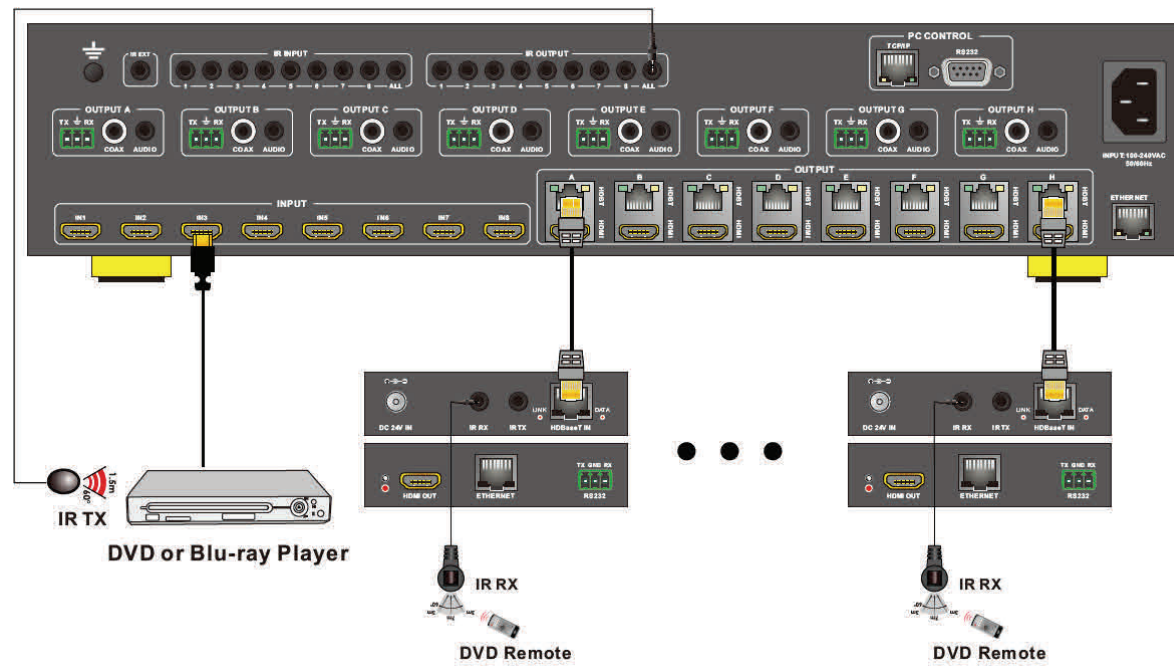


Figure 14-2

HDBaseT LAN SERVING

The matrix has an Ethernet port that when connected to the Internet will provide Internet connections to the 8 CAT5e/6/7 Output ports.

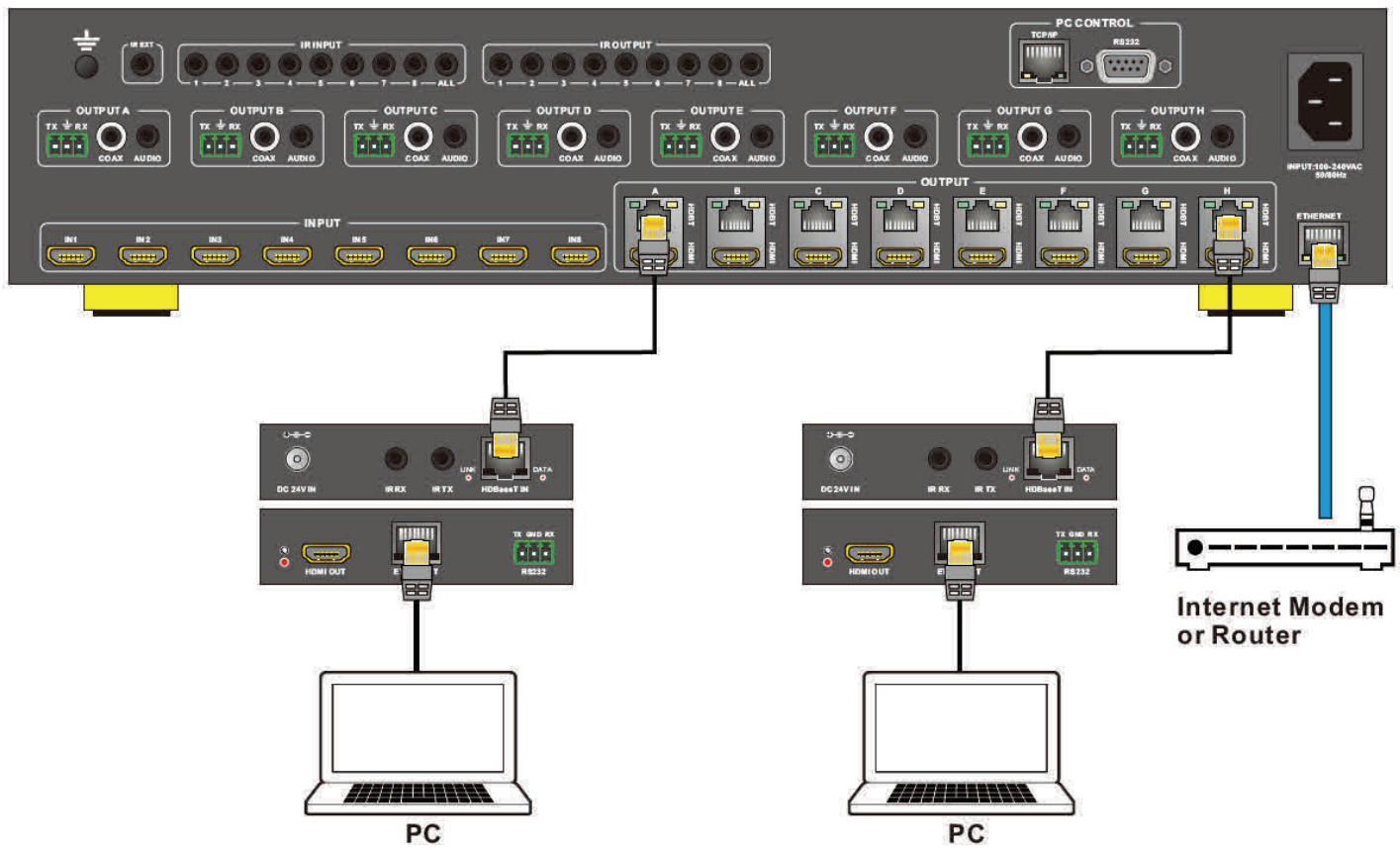


Figure 15-1

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.

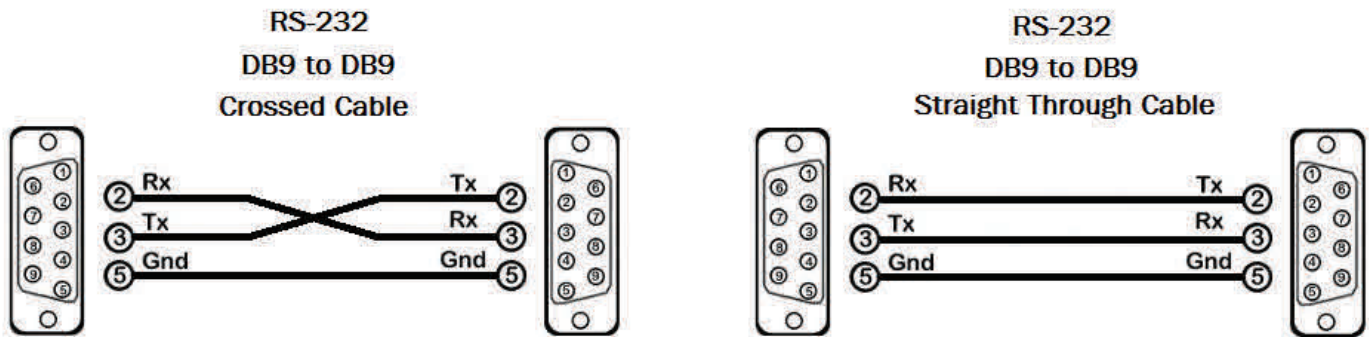


Figure 16-1
Examples of 9 pin RS-232 Straight Through and Crossed Cables

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 16-2 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.

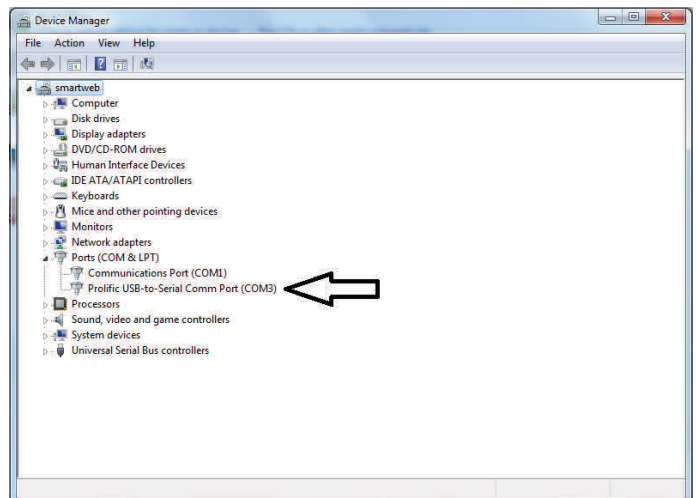


Figure 16-2

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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NOTICE

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