

# HDMV

## 4-Port Full HD Multiviewer

View four different HDMI video sources  
simultaneously on one screen.



## Installation Manual

**Smart-AVI**  
SMART AUDIO VIDEO INNOVATION



Made in the U.S.A.

[www.smartavi.com](http://www.smartavi.com)

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PART NO.	QTY	DESCRIPTION
HDMV	1	4-Port HDMI, Multiviewer Switch with PiP/Dual/Quad/Full modes
Power Cord	1	6ft Power Cable
CBLDB906	1	6ft DB9 Serial RS-232 Cable



# Technical Specifications

<b>VIDEO</b>	
Video Bandwidth	Single-link 340MHz [10.2Gbps]
Resolution HDTV	480i,480p,720i,720p,1080i,1080p
PC Resolution	800 x 600 up to 1920 x 1200
Input Video Signal	1.2 volts
Input DDC Signal	5 volts
Single Link Range	1080p
Format	HDMI 1.4
DVI Compliance	Single-link DVI-D 2.0
Output Cable Length	Up to 20 ft.
HDCP Compliance	1.0/2.0
Video Bandwidth	Single-link 340MHz [10.2Gbps]
Input Interface	(4) HDMI
Output Interface	HDMI
Connector	Type A [19-pin female]
<b>CONTROL</b>	
Front Panel	Tact Switches
RS-232	DB9 (female)
<b>MECHANICAL</b>	
Height	1.70 in. (1U)
Width	17 in. (431.8 mm.)
Depth	10.2 in. (259 mm.)
Weight	4.05 lbs. (1.84 kg.)
<b>POWER</b>	
Requirements	Internal 100-240 VAC
Power Supply Approvals	UL, CE, CSA, CEC, RoHS

# Introduction

The HDMV Multiviewer Switch allows you to view up to four different high definition video sources simultaneously on one display device. Connections to video sources are managed via HDMI connectors. Advanced viewing options include quad-mode, full-screen mode, and PiP (picture in picture) mode. Use this device to simplify management of multiple sources by controlling them all through a single display.

## Features

- View up to four computers on a single monitor at the press of a button
- On-screen display (OSD) makes setup and switching easy
- Change views by pressing the tact switches and RS-232
- Display each computer with clean and crisp high-resolution video
- Supports HD resolutions up to 1920x1080p
- Quad-mode splits the screen to show four computers on one screen
- PiP-mode displays one computer in full screen with three thumbnail views

Status LEDs



Front control Panel

RS-232 Connection



Power

Output

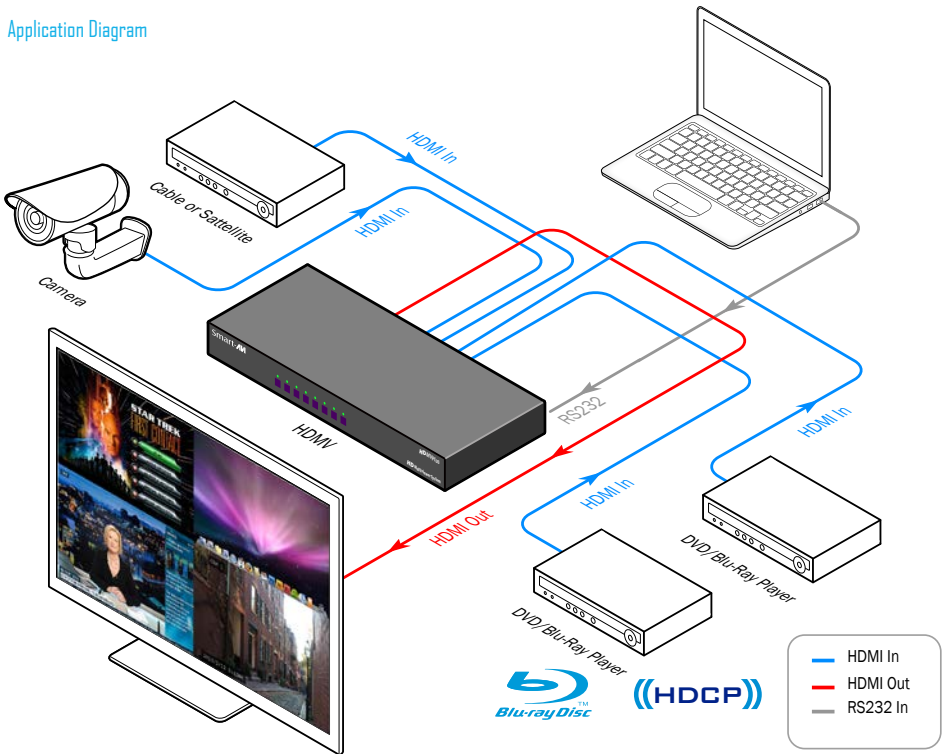
RS-232 (DB9) connection

HDMI inputs

# Applications

- Law enforcement
- Security Clearance
- Hospital and Hospice Care Patient Monitoring
- Professional Presentations
- Corporate or Educational Presentations
- Financial (Remote Servers/User Control)
- Call Centers for Technical Support
- Industrial (Long-Range Workstation Isolation)
- Airport Installations (Air Traffic Control/Passenger Information)
- Medical (Remote Operation Away from Sensitive/Magnetic Equipment)
- Recording (for Large Studios where Editing/Mixing Stations are Compact and/or Require Complete Silence)
- Entertainment Production and Post production

Application Diagram



## Connecting the Box

The power connection and switch are located at the back of the unit as well as the RS-232 connection and all HDMI and USB inputs and outputs. Connect all peripheral devices first and turn them on before powering on the HDMV.

## Modes

### AVAILABLE CONFIGURATIONS



**FullScreen Mode** - In the FullScreen mode, one of the four video sources is displayed in full screen size and maximum resolution. Keyboard and mouse operation automatically switch to the corresponding computer.

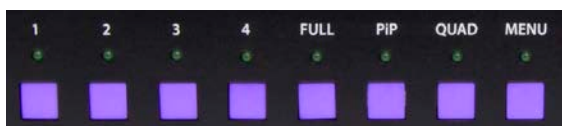


**PiP Mode** - In the PiP (picture in picture) mode, the full screen displays one of the four video sources, and is accompanied by three smaller images (thumbnails) containing the other video sources on the right-hand margin of the screen, allowing simultaneous monitoring.



**Quad-Mode** - In Quad mode, the screen is split into four fields of equal size with the four video sources or computers being displayed in each of these fields. Keyboard and mouse operation can be assigned to the field of the corresponding computer.

## Using the Front Control Panel



To switch to Full Screen Mode press the button "FULL" on the front control panel and then select the desired channel 1, 2, 3, or 4.

To switch to picture in picture mode press "PiP" on the front control panel and then select the desired channel 1, 2, 3, or 4.

To switch to Quad-Mode press "QUAD" on the front control panel and then select the desired channel 1, 2, 3, or 4.

# Using the On Screen Display

The OSD can be accessed by using the MENU button on the front control panel. The OSD allows you to change modes, move the OSD position, toggle the hot plugs, and restore the HDMV to factory defaults.



To change modes with the OSD simply navigate using the following buttons on the front panel:

- 1 - Down
- 2 - Up
- 4 - Select
- FULL - Enter



To save the settings navigate to the "Save" text and Enter (FULL button). The next time the HDMV is started the current screen mode will load by default.



To restore the factory settings click scroll down to “Factory Reset” and enter. The HDMV will perform a power reset on itself.



The position of the OSD can be moved around. Select the “OSD Position” text and press enter. Next use the 1, 2, 3, 4 buttons on the front control panel to move the OSD, where 1 is down, 2 is up, 3 is left, and 4 is right.





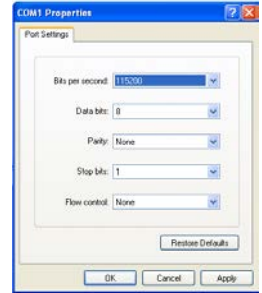
# RS-232 Operation and Console Commands

The HDMV may also be controlled via RS-232 commands; this feature requires an RS-232 card installed on your computer or a USB to RS-232 adapter. First connect the RS-232 cable between your PC and the HDMV.



Next connect to the device using HyperTerminal or a similar serial data application and an DB9 for RS-232 connection. The settings for the connection are shown in the picture on the right.

Any serial data application similar to HyperTerminal will be able to connect to the HDMV provided the Bits per second are 115200, the data bits are set to 8, the Parity is "None," the stop bits are "1," and there is no flow control. HyperTerminal comes standard on windows XP and can be enabled on Windows Vista, Windows 7, and Windows 8. There are many applications available for windows, Linux, and Mac operating systems.



# Console Commands Continued

MODE	CONSOLE COMMAND	DESCRIPTION & EXAMPLE
<b>Quad Mode</b>	//Q#<CR>	4 inputs on screen, equally displayed. “//Q2” quad mode, channel 2 as user control
<b>Full Screen Mode</b>	//F#<CR>	1 input on screen, displaying full screen. “//F4” Full mode, input 4 selected
<b>Picture in Picture Mode</b>	//P#<CR>	4 inputs on screen, main selection largest Area. “//P3” Picture in picture mode, input 3 selected
<b>Change User Control</b>	//U#<CR>	Changes USB control to input selected. “//U4” change to user channel 4 (In PiP mode with main input 1, control over input 4)
<b>Reset</b>	//reset<CR>	Resets the HDMV box
<b>Query Inputs</b>	//QI<CR>	Queries which input is selected as control, returns input number
<b>Input Status</b>	//IS<CR>	Queries the current display properties of each input, returns a table of resolution values
<b>Hot Plug</b>	//H#<CR>	Hot plugs devices, useful for some Blu-ray Players and Video Cards. Will wake up sleeping devices. “//H2”, hot plug input 2
<b>Memory Reset</b>	//MR<CR>	Clears the video memory for a refresh

## Accessories

This product is backward compatible with DVI-D and VGA with the appropriate adapter.

SmartAVI makes a full line of accessories that can be used to enhance features of this product from giving you remote access via the Internet or extending the range inputs and output over 200 ft, to many others. Visit our website for more information.

### Attaching a DVI-D Device



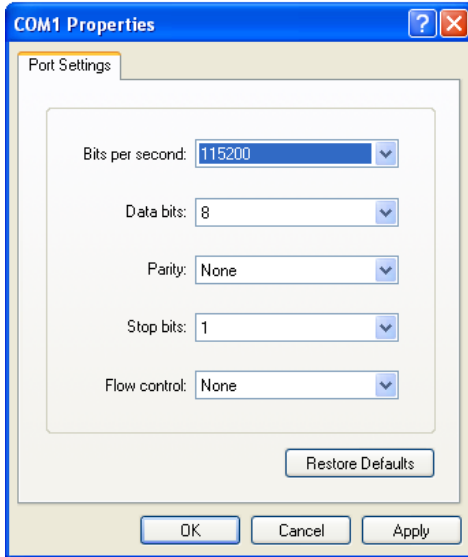
An inexpensive HDMI to DVI-D adapter will enable you to input or output your signals to DVI-D devices

# Programming the EDID

The EDID (Extended Display Identification Data) of your monitor or display can be programmed into the HDMV. This will allow the HDMV to pass essential display information between the display and the attached sources. Information pertaining to color depth, resolution, and sound must be properly configured in order for the optimum viewing .

To program the EDID first disconnect any inputs to the HDMV and plug a monitor in to the output. Next power the device on.

Plug an RS-232 cable or USB to RS-232 adapter into the HDMV and your computer.



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1. Connect a monitor to the output port of the HDMV.
2. Connect to the HDMV using RS-232 (use PuTTY or HyperTerminal).
3. Type in "debugon" followed by <ENTER> to go to Debug Mode. You will not see any feedback until you press the <ENTER> button.
4. If this has been done properly, you should see the message "CLI Menu Enabled" on the terminal client.
5. Enter "?" to see the rest of the options.
6. To learn screen, enter the following command:  
wEDID a 3
7. Wait for all the debug messages to stop.
8. Once done, the EDID is learned and your sources should be able read the EDID of your monitor.

\*Note: other debugging options such as enabling and disabling hotplug, changing output mode, and resetting the unit can be accessed through the CLI Menu.

# How to Upgrade the Video Firmware

Download the latest firmware upgrade from the SmartAVI website.

Open either Chip45Boot2 or a serial data application such as HyperTerminal. Chip45Boot2 may be downloaded from the Chip45 website. HyperTerminal, Putty, TeraTerm are widely distributed and free to use.

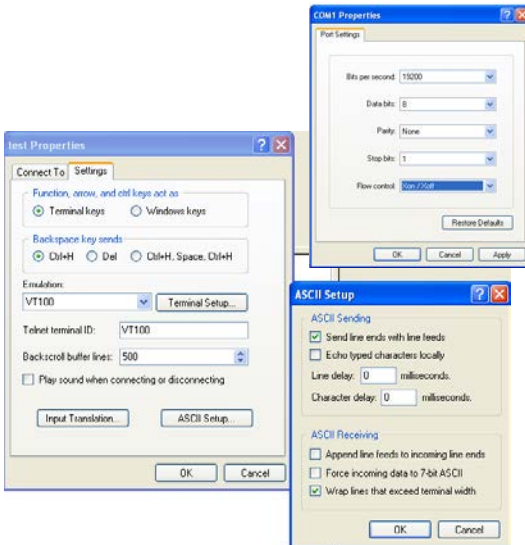
Using Chip45Boot2 GUI 



- 1) Connect an RS-232 cable or USB to RS-232 adapter from your computer to the HDMV.
- 2) Open Chip45Boot2 GUI and select the appropriate com port.
- 3) Select a baud rate of 115200 (if connection fails select a lower baud rate)
- 4) Press "Select Flash Hexfile" and locate the firmware upgrade. (Don't forget to download the upgrade first.)
- 5) With the power to the HDMV off, press "Connect to Bootloader" then turn the power to the HDMV on.
- 6) Once connected click on "Program Flash"
- 7) When finished click "Disconnect from bootloader" and power cycle the HDMV.

Occasionally Chip45 may give an error "Unable to connect, with a red status flag." Clicking "connect" just after seeing this message will sometimes connect. Also consider lowering the baud rate.

Using HyperTerminal 



With a Terminal Program:

- 1) Set PC serial port to 19200 baud, 8N1, XON XOFF (we suggest to start with 19200 baud, even though higher baud rates are possible, depending on target MCU clock.) Set the line endings on your terminal program to "CR+LF" for outgoing messages, this means to "send line ends with line feeds." Emulation should be set to "VT100."
- 2) Hold shift-U keys pressed while powering on or resetting your target
- 3) See the welcome message "c45b2" plus version number plus prompt on the next line now the boot loader is ready to accept the firmware.
- 4) Type "pf" to load the firmware. An echo of "pf+" will return.
- 5) Send text file, go to desktop and "show all" and select the hex file. (Send it as a text file although it is a hex file.)

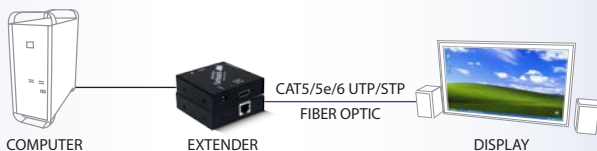
**Notes:**

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At SmartAVI, we offer a complete line of audio/video solutions for high-quality signal switching and distribution. Our devices support multiple signal types including VGA, DVI, HDMI, USB, RS232, IR and more.

## EXTENDERS



## SPLITTERS



## SWITCHES



At SmartAVI, we offer high-quality products including digital signage, video walls, signal extenders, splitters and switches and fiber optics. All of our products are manufactured in the United States in our North Hollywood, California facility.



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